Our business is your IBM Hardware
Lease · Sale · Purchase
PREMIER COMPUTERS
3 UNION COURT, RICHMOND
SURREY TW9 1AA, ENGLAND
Tel 01 940 1134 Telex 926734

Major changes in office work predicted

MAJOR changes in the way people work in offices will soon be brought about by the convergence of the technology of computers, communications, and office automation. That is the view of Anne Westley, editor of the latest State of the Art Report from Infotech, who envisages in the near future managers needing typing skills and secretaries needing knowledge of computing to handle electronic office systems.

Recent changes in distributed processing, communications, and microprocessors are, says Westley, "beginning to gel into a single technology".

As a result of these convergent systems, functions such as DP, secretarial services and telecommunications management are "due for a major shake-up," she asserts.

The report, entitled "Convergence computers, communication and office automation", covers 600 pages and comprises papers from 20 experts, including Howard Morgan of the Wharton School at Pennsylvania university, and UK consultant David Butler.

An analysis of the nature of technology convergence, and the economic and political factors motivating its development, is provided, together with a review of the critical issues involved in implementation of such systems.

Westley

NEWS IN BRIEF

Last minute hitch at Times

YET more disagreement over the operation of computers is at the centre of the refusal by the rank and file of print union Natsopa at The Times to agree to the formula for restarting publication reached with all other union leaders.

Clerical members of Natsopa are unhappy about Appendix 1 of the settlement which requires them to accept in principle the use of an ICL 2903 for commercial applications, which will entail the loss of 55 jobs.

MicroCobol deal

TWO software houses in Australia have signed agreements with CAP-CPP Microproducts covering the marketing of MicroCobol and application packages written in it. They are Admin EDP, of Sydney, and Computer Power, of Melbourne.

4,000 characters

A VDU that can store text abstracts with up to 4,000 characters and which can support a set of 500 different characters, including Greek and mathematical symbols, has been developed by Logica Data Systems for the Institute of Electrical Engineers. The IEE has ordered seven of the VDUs for online access to its Inspec service.

Savings upgrades

DESPITE warnings by the Civil and Public Services Association about anticipated staff cuts within the Department of National Savings, the department said that its computer operations were unlikely to be seriously affected and that upgrades from ICL System 4 to 2900 series would go ahead.

Reports of radar sales to South African Air Force put DEC in peril

DIGITAL EQUIPMENT, a major supplier of computers to Plessey, could be in serious trouble with the US government if reports about Plessey selling radar systems to the South African Air Force are substantiated.

At the time of going to press, Plessey had still not commented on reports in the national Press that its radar systems factory at Chessington, Surrey, was training South African Air Force personnel to operate DEC computers in radar surveillance systems. According to the reports, the systems were destined for installation in the North Transvaal, near South Africa's borders with Zimbabwe-Rhodesia and Mozambique.

Having been told by Computer Weekly of the news reports, a spokesman for the Department of Commerce in Washington said that if they were accurate an investigation into the affair would be started to establish DEC's degree of involvement with Plessey.

He said that a US computer company supplying equipment to South Africa for military purposes could have all its export licences withdrawn for a period, depending on the seriousness of the offence. It could also be fined up to £50,000 and the company personnel directly involved could be imprisoned for up to five years.

The US government specifically forbids any US based computer manufacturer from selling equipment to South Africa for military type applications even if its kit forms part of a system supplied by a non-US manufacturer.

Plessey is a major OEM customer of DEC, being supplied with a variety of machines from DEC factories in Europe and the US. But DEC in the UK refused to comment when asked if any machines were supplied to the radar factory at Chessington.

The Foreign Office in London issued a statement saying that it was seeking further information from Plessey about the nature of the kit being supplied to South Africa. The FO pointed out that Plessey had been granted licences dating back to 1976 to supply South Africa with air traffic control radar for civil air traffic, but not for military applications.

The licences were granted after the scrapping in 1975 of the Simonstown defence agreement between the UK and South Africa, but before the UN Security Council resolution in November 1977 banning arms sales to South Africa. However, the FO pointed out that the UK government was committed to honouring the UN resolution.

The investigation into Plessey's possible involvement with the SA Air Force was initiated by the Anti-Apartheid Movement.

Thomas Watson resigns

THOMAS WATSON Junior is to resign as chairman of the executive committee of IBM's board of directors after eight years. This move follows his appointment as US Ambassador in Moscow (CW, August 2), which was confirmed last week by the US Senate.

Year late

● From front page

ratively slow device the number of instructions which can be handled each cycle is limited.

Sources close to the project estimate that the prototype System 38 is running at only 20% to 25% of its rated speed and that as well as operating system problems there are difficulties with the channels.

An enormous programming effort is working on the problem at IBM's Rochester, Minnesota facility.

Second review

ANSI's draft standard for subset PL/I, X3.74, has entered its second public review and comment period. The current document is the eighth revision and incorporates changes made after the first review period which began last autumn.

Immigrant controls speeded up

SCHEMES at the Home Office to introduce computers for immigration control (CW, August 3, 1978) are expected to come to fruition early next year when two different systems will start operating. One will be a minicomputer at Harmondsworth, holding information on illegal immigrants, and the other will be the computerisation of the processing of landing and embarkation cards.

A study is also under way by a working party of the International Civil Aviation Organisation of the feasibility of a machine-readable passport, which would consist of a plastic card with personal and visa information encoded magnetically. This would speed up immigration control at airports, and make possible online links to such databanks as that for illegal immigrants.

West Germany may introduce the first machine-readable passport as early as 1981, but any scheme is dependent on what other countries decide to do, since passports and visas are international in their function.

The landing and embarkation cards scheme, which will run on existing Home Office machines, is intended partly to pinpoint foreigners who overstay the time permitted on their visas. This at present can only be done by hand, on a spot-check basis.

Univac tops BC/7 line

A FOURTH model has been added at the top of Univac's BC/7 line of Intel 8080-based small business computers in the US. Called the BC/7-900, it offers main memory capacity doubled to 256K bytes and the processor is claimed to be almost 50% faster than that of the BC/7-800. The number of jobs which can be running concurrently in the processor has been doubled to four, and the enhancement is offered as a field upgrade.

First US deliveries are set for the second quarter of 1980. The BC/7-900 is set for UK launch just before the International Business Show in Birmingham in October, and is also scheduled to appear at Sicob in Paris in September.

Amdahl-Memorex talks

● From front page

with the smaller but much faster-growing Storage Technology. The talks are believed to have broken down because Storage Technology wanted a cash bid from Amdahl rather than a share exchange.

Storage Technology has been particularly successful with its large IBM 3350-compatible disc drives, which are important in the market served by Amdahl (CW, August 2).

Attractions of the Memorex merger for Amdahl are summed up in the word synergy. The products are fully complementary, and an Amdahl spokesman in Sunnyvale, California — which is conveniently close to Memorex headquarters in Santa Clara — told Computer Weekly that as well as having many customers in common, each company had customers the other would like.

"We are also interested in the Memorex data communications products because that is a business we want to enter."

Amdahl lost out last year to NCR in a bid to acquire communications processor manufacturer Comten of Minneapolis.

Dumb terminal- Smart buy!
from £495.00 or £30 p.m. Rental (12 months) including maintenance
★ 12" Diagonal 24 line screen
★ 1920 Easy to read white characters ★ 59 Data entry keys
★ 64 ASCII characters in upper case
★ Optional auxiliary keypad ★ Over 75,000 Lear Siegler ADM3 terminals installed
★ Nationwide maintenance
OPTIONS:
VT52 Compatibility
Lower case
Answerback
Split baud rate
Prices
Ex VAT/Ex warehouse
Delivery £15 up to 5.
Over 5 (one shipment) - nil
Suede Brown/Beige
Brown/Light Blue
Cash with order
CSS (Scotland) LTD. 191 High Street, Kirkcaldy KY1 1JA
Tel. 0592-3136

Atlantic Computer Leasing Ltd.,
Atlantic House, Red Lion Court,
London, EC4
Tel. 01-[illegible] Telex: [illegible]
AVAILABLE IMMEDIATELY
370/138,100 or JOO
Fully features (inclusive IFA, IPA English Language),
Short term rental or Flexlease.
Please call Atlantic for more details.

COMPUTER MARKETING HAVE IT...

TERMINALS		MONTHLY RENTAL from	PURCHASE from
NL	Newbury Labs VT52 Emulation	£50.00	£840
NL	Newbury Labs range of British VDUs	£42.00	£495
m22	Mullers from high speed paper tape reader punch	£57.00	£975
TALLY	T-1612 160 cps Bi-Directional keyboard printer	£119.00	£1895
TALLY	T-1602 160 cps Bi-Directional printer with LA180 interface	£119.00	£1895
digital	LA34 Decwriter IV	£50.00	£829
digital	LA36 Decwriter II	£54.00	£895
digital	LA120 Decwriter	£102.00	£1675
digital	VT100 Video terminal	£66.00	£1095
[illegible]	AJ211 Acoustic coupler	£10.00	£185
SIGMA	Graphic option controller	£151.00	£2168

SYSTEMS
digital — Most LSI-11 Modules Ex-stock. LSI-11 Systems on short delivery
Micro business systems — Consisting Microprocessor twin floppy disc, VDU and Matrix printer and including standard system for Payroll, accounting and invoicing, plus all hardware and software maintenance for one year and installation and training – £5950.00.
Tel: Brentwood (0277) 811131
COMPUTER MARKETING MICRO SOFTWARE SYSTEMS
West Horndon Industrial Park, West Horndon, Essex CM13 3XJ. Telex: 995765

Printed in Great Britain by Q.B. Limited, Sheepen Place, Colchester, CO3 3LJ, and published by IPC Electrical-Electronic Press Ltd., Dorset House, Stamford Street, London SE1 9LU.

[illegible]design for HIGH QUALITY COMPUTER STATIONERY
plus FIRST CLASS SERVICE
COMPETITIVE PRICES
QUICK DELIVERY
NATIONAL WORKS
HALL STREET
DUDLEY WEST MIDLANDS
Telephone DUDLEY (0384) 213061 Telex 338487

start small and grow large with digico
If you are in the business of profitable, successful computer installations then you're in the same business as DIGICO.
Telephone Stevenage 4981

Number 666 Thursday, August 16, 1979 Price 18p

Data Preparation
We have the capacity to punch your peak loads, file set-ups or regular work on 80 Column cards
Croydon: Nada Waugh 01-689 2244
Warrington: Paul Wilkinson 0925 53391.
Lowndes-Ajax Computer Service
COM
Remote Computing
MVS/TSO

Briefing

NCR 'pensions' strike goes on

IT looks unlikely that there will be a quick end to the two-week-old strike at NCR's Dundee plant, where 8500, 8400 and 8200 systems are produced, as well as the NCR 1780 autoteller (CW, August 2).

Staff are concerned at the company's decision to reduce its contribution to the pension fund by about £1 million since the fund produced a profit. "The company has not made any move to pass on this surplus by improving the conditions of the pension fund," said a union spokesman.

Times formula

MEETINGS are being held this week of the rank-and-file Times members of the print union Natsopa, to consider the republication formula worked out by national officers and management. Despite widespread opposition, officials hope the settlement will be accepted. On page 5, Rory Johnston analyses the settlement, and suggests that The Times has achieved almost nothing from the long and expensive suspension.

Welsh factory

BURROUGHS' office systems division is to build a new 70,000 sq ft factory at Deeside Industrial Park, Clwyd. It will manufacture film-based coatings for such products as correctable typewriter ribbons and multi-strike film for word processing machines.

Post Office offer

HAVING rejected the latest Post Office pay offer of about 18% (CW, August 9) members of the Society of Civil and Public Servants are discussing whether to escalate their strike action. Members of the Civil and Public Servants Association are still being balloted on whether to continue strike action, and the results will be known tomorrow (Friday).

Sales advance

DESPITE the serious financial problems of its US parent company (CW, August 9), Itel International has sold more IBM compatible Advanced Systems in the first seven months of 1979 than in the whole of last year — 67 compared with 66. Of the machines sold and installed since March the 7031 model has accounted for 27.

Banking on 2960s

THE Bank of England has ordered two ICL 2960s worth £2.7 million to replace two 1904s in the Accountant's Department, which maintains registers of £65,000 million worth of government and other stocks. The 2960s will run under ICL's DME system which allows 1900 programs to run unchanged on a 2960 and will support over 130 display terminals linked through 7500 terminal processors.

UK after 10% of telecomms market

Christopher Chataway, chairman . . . "A good product for world markets."

BRITAIN'S effort to win a 10% share, worth about £10 million a year, of the world market for telecommunications switching systems has taken a step forward with the formal establishment of British Telecommunications Systems Ltd.

Under this banner the joint company formed by the Post Office, STC, Plessey and GEC (CW, March 1) will set out to exploit System X in overseas markets.

It was launched last January, but legal and administrative problems have slowed its progress. Managing director John Sharpley, a former Plessey man, has been setting up the organisation and BTS is now ready for the international debut of System X at Telecom 79 in Geneva next month.

Christopher Chataway, former Minister of Posts and Telecommunications and of Industrial Development in the Heath government, has been appointed chairman of BTS, and his City experience is expected to be a considerable asset to the company.

Chataway is managing director of Orion Bank and has several other City appointments as well as being chairman of Honeywell's advisory board. In the UK Honeywell does not have a board of directors and the advisory board provides guidance for Honeywell's overall operations.

BTS is responsible for the promotion and marketing of System X overseas and Chataway told Computer Weekly that although breaking back into world markets was going to be tough, with System X the UK had a product with which it could be achieved. He expects to be making several overseas visits to back up BTS operations.

Outlining the development of BTS, Sharpley said it would employ between 40 and 50, with agents located in some ter-

● Turn to back page

John Sharpley, managing director . . . "Initiating discussions with potential customers."

ICL hires back fire-hit 2960s

ICL has come to a unique compromise with the insurers of the two 2960s suspected of being contaminated by smoke after a fire at the Swiss Bank computer centre in London last year (CW, November 23, 1978).

ICL is to hire the machines from the insurers, Sun Alliance, for two years and use them for its own in-house DP requirements. If they are found to be fault-free at the end of this period, Sun Alliance will be able to sell them as second-hand machines with full support from ICL.

The agreement is the culmination of months of highly sensitive negotiations that followed the replacement of the 2960s involved in the fire, which were virtually brand new, with two new 2960s at a cost to the Sun Alliance of about £1.4 million.

Even though the fire itself was confined to the Denco air conditioning system, the smoke that found its way into the computer room contained chemicals which ICL insisted could have a serious long-term effect on the performance of the 2960s. For that reason ICL said that it would not maintain the 2960s if Sun Alliance sold them to a third party.

But electronic repair specialists, G and E. Bradley, brought in by the insurers, decided that the machines could easily be reclaimed (CW, December 14, 1978) pointing out that the level of potentially harmful chemicals in swabbings taken from various parts of the hardware was very low.

ICL has now issued a statement that it will clean the two machines, to a standard approved by the Insurance Technical Bureau (an organisation which has been following the case closely) and will then recommission and maintain them for use within ICL for two years.

ICL confirmed that the machines would then be made available to Sun Alliance for disposal, and that the provision by ICL of a maintenance service (to the new user) would depend on ICL's experience of the equipment during the two-year period.

ICL added that it would provide ITB with the opportunity of monitoring the performance of the equipment over the two years.

IBM buys BUPA benefit for 15,000 employees

FOLLOWING in the steps of many leading UK companies, IBM is to pay for all its 15,000 employees to be covered by the BUPA private medical insurance scheme.

The cost has not been revealed but although "Bulk Protection" packages cost much less per head than individual cover, it is unlikely that IBM will be paying out much less than £1 million a year.

Private medicine being anathema to trade unions, their reaction has not been favourable. ASTMS, which is among the unions that have tried to win recognition from IBM, condemned the move.

The national officer for workers in the Health Service, Reg Bird, said ASTMS was absolutely opposed to the scheme. He rejected the idea of including private medicine in any package of fringe benefits.

Science education to be reviewed

POSTGRADUATE education in scientific subjects is being reviewed by the Research Councils, in an effort to see whether too few or too many students are being trained, and to see if industry's needs are being met. In particular, the Science Research Council is starting trial funding for short courses aimed at helping people in industry keep up-to-date with technical change.

The Advisory Board for the Research Councils is setting up a working party to look into the relationship of manpower needs to training, initially in the work of the Science, Natural Environment, and Social Science Research Councils. The party will look into the ways that the councils decide on the numbers of studentships to be awarded and how they are distributed between subject fields and between courses and research.

It will also ask whether students of sufficient quality are being attracted to courses, and whether the training given them is appropriate.

The SRC's experimental scheme for short courses is a new venture for the Council, which normally only funds students on courses of over six months.

Training for non-jobs

THE difficulty of training people in advance for indefinable jobs that do not yet exist is one of the biggest problems the UK is likely to face in any attempt to adapt to new technology.

This is expected to be one of the main conclusions of a detailed study of the implications on manpower of microelectronics, now being prepared by the Manpower Services Commission.

The MSC is believed to have found it much easier to predict which industrial sectors will lose jobs, rather than those which will gain.

One of its general recommendations is likely to be a call for higher standards of general education as a major long-term aim, to make individuals more adaptable and willing to change jobs during their working lives.

The report is expected to be completed by the end of October, and could be published by the end of this year.

ASTMS wins ICL recognition ballot

THE white-collar union ASTMS has won a postal ballot on recognition for middle-to-senior staff within ICL's UK Division — the sales and support part of the company.

Voting figures were 1,319 in favour of ASTMS representation and 713 against, and once formal talks with the company are completed, ASTMS says it will have a total membership of 12,500 in ICL.

Infoline set to go live

LIVE usage of Infoline, the UK's scientific retrieval service, is expected to start within the next two weeks, following delays caused by the need to rewrite the US-originated software to provide adequate response time.

A few test users already have access to the system which runs on GSI's bureau machine, and Infoline expects to start sending out invoices this month.

Originally it had been hoped to have Infoline working in February (CW, January 4) but the software, which is a modified version of Basis from the Battelle Institute, was not performing well and had to be considerably revised.

At present, the whole of the World Patents Index, 1½ million records, is up on the system and, by October, Chemical Abstracts with 2½ million records will be accessible. One hundred and sixty customers are already signed with Infoline, 60% on the Continent and 40% in the UK, and they will be given access at the rate of about 10 a week through the autumn. Most are primarily interested in the WPI data base.

CONTENTS

Computerview on electronics education 2
Focus on the job ads 2
Library project axed 3
IBM expansion in Europe 3
Downtime by Chad 4
Letters to the Editor 4
Cost of The Times dispute 5
Gilb's Mythodology 6
Programmer Notes 6
Software File 7
Puzzler 7
Micro News 8
Views differ on role of SF 9
People and Events 10
Revolution on the farm 11
Progress on standards 12
WP advice centre 12
Op Spot 14
East-West gateway 15
Introduction to Pascal 16
Fight or switch choice for bureaux 17
Sales and Marketing Bit 46
Gene Amdahl to retire 48

JOB VACANCIES PAGES 20-47

STL
Follow the Pacemakers
Storage Technology announce that it has now moved to more extensive premises following a very successful first twelve months of operations in the UK.
Storage Technology is the world's largest independent supplier of IBM compatible Tapes, Disks, Memory and Solid-state disks.
For further details please contact Colin Cook at:
STL Storage Technology Limited.
2 Rubastic Road, Southall, Middx UB2 5LL
Telephone: 01-571 0062 Telex: 263020

COMPUTER WEEKLY

Vol. 27 No. 666
Thursday, August 16, 1979
Editor
John Kavanagh 01-261 8033
Deputy Editor
Tony Higgins 01-261 8696
Advertisement Manager
Harry Hutson 01-261 8359
01-261 8503
Class Ad Manager
Brian Durrant 01-261 8597
Publishing Director
Dr J. A. G. Thomas
Editorial Director
Chris Hipwell

IPC Electrical Electronic Press Ltd., Dorset House, Stamford Street, London, SE1 9LU. Telephone: 01-261 8000. Telegrams/Telex: 25137 BISPRS G

Branch Offices:
Birmingham: 202 Lyndon House, Walsall Road, Birmingham 22B. Telephone 021 356 4838

Manchester: Scotland House, Talbot Road, Stretford, Manchester M32. Telephone 061 872 4211

New York: 205 East 42nd Street, New York NY 10017. Tel: (212) 867 2080. Telex 421210

Published weekly on Thursday

Registered at the Post Office as a newspaper. Price per copy 18p

© IPC Business Press Ltd 1979

CIRCULATION INQUIRIES
Requested Readership: 01-837 3636
Subscriptions. 0444 59188.

EDITORIAL

Keith Jones	261 8344
Tim Palmer	261 8031
Peter Hewitt	261 8303
Rory Johnston	261 8025
Martin Banks	261 8608
Robin Webster	261 8170
Bernard Allen	261 8035
Donald Kennett	261 8719
Mike Marples	261 8042
Dan Mitchell	261 8042
Chris Vowell	261 8543
Nancy Pocock	261 8543
Judith Morris	261 8543

ADVERTISING

Display	
Chris O'Hea	261 8656
Lloyd Collins	261 8743
Steve Bass	261 8203
Ian Carter	261 8109
Manchester	
Harry Alcon	061-872 4211
Birmingham	
Ken Parrott	021-356 4838
Classified	
Chris Prior	261 8028
Eddie Ferrell	261 8027
Mark Williams	261 8019
John Farrar	261 8098
Ken Welford	261 8453
Mark Pulver	261 8174
Manchester	
Owen Kelly	061-872 4211
Birmingham	
Sash McGowan	021-356 4838
Production	
David Abbey	261 8018
Steve Robinson	261 8676
Peter Regis	261 8615

Computer Weekly has a circulation each week of over 92,000 including the highest fully requested circulation in the UK. The International edition, which is published 10 times a year has a circulation of over 94,000.

Computer Weekly is sent free of charge to the following categories in the UK and Eire only: Company directors, company secretaries, management services executives, civil servants responsible for computing, management/computer consultants, lecturers and teachers, DP Manager/supervisors, systems analysts/O&M officers, programmers, operators, computer salesmen, field engineers.

CHANGE OF ADDRESS
Please give four weeks' notice if possible, and return a recent wrapper in which a copy arrived, to: The Manager, Controlled Circulation Department, 40 Bowling Green Lane, London EC1 ONE.

Controlled circulation department IPC Business Press (Sales and Distribution) Ltd. 40 Bowling Green Lane, London, EC1R 0NE. Tel: 01-837 3636. Subscriptions for readers outside the above categories: UK £18, UK students £6, overseas £25, overseas students £12.50, US and Canada $86, US and Canada students $32.50, airmail to the Middle East or North Africa £38, airmail to rest of Africa, North and South America or South Asia £45, airmail to the Far East, Australia or New Zealand £50.

ISSN 0010-4787

COMMENTARY

Triumph of talk over action

TALK is no substitute for action when it comes to solving problems. It may, of course, be a necessary preliminary, but there comes a time when the talking has to stop if the problem is to be solved at all.

Unfortunately, we in Britain have become a nation of talkers. No sooner does a problem raise its head than committees are formed, working parties set up, conferences held. Every aspect of the problem is examined, analysed and agonised over by a growing body of researchers, consultants, advisers and instant experts.

The whole thing is discussed ad nauseam and eventually, when everybody is heartily sick of the subject, reports are submitted, recommendations made and as often as not what's been said is filed and forgotten without any significant action ever being taken. Talk has triumphed *again*.

That may seem a cynical or even defeatist way of announcing that a special one-day conference is being held on October 3 under the auspices of the National Electronics Council and the British Association for the Advancement of Science, to consider the subject of Careers in Electronics.

But it is precisely because the subject is so important that we have introduced it in these terms. Computer Weekly has, over the past ten years, consistently advocated the provision of computer education in schools and has argued that this could be successfully achieved only if a centrally planned and co-ordinated programme were adopted.

Earlier this year we spoke of computer education for secondary school pupils as a "national necessity" (Computerview, April 19). Today, under the shadow of the government's spending cuts, it seems that the plans formulated by the former administration to establish a £12 million programme for promoting the study and use of microcomputers in schools may, after all, turn out to be a matter of talk rather than action.

Now we have an initiative from the National Electronics Council and the British Association for the Advancement of Science in the form of a conference to discuss not computer education *per se*, but rather the associated subject of microelectronics and education.

Announcing the conference, Sir Ieuan Maddock, secretary to the British Association, said, "we are living in an electronics revolution, the pace of which grows daily, and already many nations such as the United States and Japan are taking rapid strides in advanced electronics technology. If the UK is to maintain, let alone improve, its position in worldwide markets, we must prepare now and take urgent steps to ensure a supply of electronic technologists at all levels.

"Nowhere is this more important than in our schools. Without a stimulating introduction to this all-pervasive technology and the appropriate education regarding its potential scope, our young people will not be able to or wish to follow a career in electronics.

"There is an urgent requirement now for a high proportion of our most gifted young men and women to learn about the potentialities of electronic devices — particularly microprocessors — and to equip them for the future. The problem is how to adapt and adjust the nation's educational system to prepare these young people to be ready to seize these opportunities in manufacturing and service industries, offices, travel and entertainment.

"It is evident that there is already a great need for experts in electronics. But how many are required? What careers and rewards can they expect, and what should they be taught at school so that they are ready for these careers?"

Few would deny that these are important questions and that they deserve urgent consideration. But if those attending the conference restrict their involvement to talking rather than acting, the whole affair will be a colossal waste of time.

Over the past ten years there has been widespread recognition by many influential people, including government ministers, that computer education in schools is important. But as far as government involvement and commitment are concerned it has been all talk and no action.

Will electronics education fare any better?

Ten years ago...

COMPUTER WEEKLY AUGUST 14, 1969

HONEYWELL planned to establish a technology centre in Hemel Hempstead, to concentrate on original design and development . . . An order for **LACES**, the projected London Airport Cargo EDP System, has still not been placed. The Postmaster General was criticised for procrastination and for not taking the UK software industry into account . . . Unilever ordered IBM mainframes for the newly formed Unilever Computer Services . . . IBM's share of the world market installed computers had dropped from 70.1% at the beginning of 1969 to 69.5% at the end of the year . . . The Hungarian government was negotiating with Dnico of Steines for the manufacture of Drico mag tape and disc equipment under licence.

1984 and all that...

READERS are invited to send in cuttings for our column of the strange things people say in the media about computers. We will pay £5 for each item we publish.

A £500 million segment of the American computer industry has collapsed in the face of competition from the giant IBM, writes Harlow Unger in New York.

Eight out of 10 computers sold in the US are made by IBM, which effectively crushed its smaller competitors by introducing a new set of small but powerful computers.

The new IBM line has effectively wiped out demand for so-called "plug-in compatibles." Made by a group of about ten smaller manufacturers, they were cheap machines which could be plugged into older IBM equipment.

But IBM's new computers are even cheaper and they have made the older equipment obsolete and virtually worthless.

The result has been utter chaos for IBM's competitors.

Birmingham Evening Mail

JOBS

Today

BY now, there can be few DP professionals unaware of the current state of the job market. The particular state of this art is readily available in large measure in the back pages of Computer Weekly.

Keeping in touch with the high volume of job ads is almost an impossible task. But neglect would be unfortunate, it being the responsibility of DP management to keep firm tabs on current pay-scales and industry trends. There are few more positive methods of monitoring developments, both inside and outside the DP installation, than by watching the job ads.

The problems of recruitment have seldom been more difficult for the company. According to Ron Yearsley, of BIS, the current shortage of skilled computer professionals is nearing 25,000 and rising fast. And escalating almost as fast as salaries is the range of job titles being advertised.

Some years ago, the government produced a useful guideline to job structures. It is time that this enterprise was repeated, together with a list of guidelines for dedicated job ad watchers.

The ads often reveal far more than just job title and pay scales. Also revealed are industry trends, developments and technological progress. An increasing number of ads now feature microprocessors, for example, with emphasis heavily on micro software design. It could be that the recent strictures of Ted Cluff of the IDPM are being heeded by the micro industry.

Apart from DP management, sales organisations show a keen interest in studying the ads. A hint that a certain organisation is looking for personnel to build up a hardware development team prior to an upgrade or enhancement exercise, will have the sales teams reaching for their copies of The Computer Users' Year Book.

Other job ad watchers could find much of interest in the news that the competition is currently seeking top level datacomm specialists or re-locating the computing operation.

For many DP professionals, the job ad message is good. It seems that systems analysts are very much on the upgrade, with many companies now advertising for business analysts. So far this trend has not reached the Civil Service or State industries (at least as far as the ads go) and these institutions still prefer the more basic job title of "Technician — Grade 4(a)." Other noticeably up and coming areas are specialists in Prestel and the electronic office.

It does seem, though, that operations is becoming the cult job. Knight Computer Services, a subsidiary of British Oxygen, is currently advertising for "Graduates for operator trainee positions." Maybe Bernard Allen will have to rename his Op Spot page. The Op Campus Spot.

TICKET ORDER

COMPUTASTARS

To: Computastars, 117B High Street, Croydon, CR0 1QG.
Please supply:

..... Adult ticket(s) at 60p

..... Child ticket(s) at 30p (under 14)

for the finals of the Computastars Competition at the Crystal Palace Sports Centre on Saturday, September 29.

I enclose a cheque/PO for ..... made payable to Computastars.

PLEASE ENCLOSE A STAMPED SELF-ADDRESSED ENVELOPE

Bureau trophy donated

A TROPHY for the best team coming from a bureau has been donated by Peterborough Data Processing for the Computastars final at Crystal Palace on Saturday, September 29. And supporters who buy advance tickets will be guaranteed seats in the stand, says organiser Gordon Cairns. These can be ordered by filling the coupon (above). A bar will be available on the day.

Computastars is sponsored by Computer Weekly and Wright Air Conditioning.

Wilkes

TERMINALS
Texas Instruments Range of Printers

TEXAS INSTRUMENTS — From £1295
HAZELTINE VDU Range — From £550
LA180 DECprinter I — From £1625
LS120 DECwriter III — From £1625
LA34 DECwriter IV — From £880
Newbury Lab's latest range of British VDUs — From £495
132 col x 24 line VDU with VT52 software
Pericom — From £1285
TELETYPE 43 — From £795
QUME SPRINT 5 — From £1985

SYSTEMS
LS1-II and PDP 11/03 available ex-stock

ALL PRICES EXCLUDE V.A.T.
Wilkes Computing Ltd.
Bush House, 73 Prince St., Bristol
Tel: (0272) 25921 or 290651 Telex 449285

Modata
30 ST. JOHN'S ROAD
TUNBRIDGE WELLS (0892) 39591

DIGITAL MICROSYSTEMS DSC-2
LOW COST COMPUTER SYSTEM INCORPORATES:
- ONE MEGABYTE of floppy disk storage on two single sided 8" drives — standard
- 64 BYTES per Main Memory cycle-card — 32K and 48K also available
- BASIC, DISC BASIC, CORAL 66, TEXT PROCESSING, BASIC, COBOL, FORTRAN available

EXPANDABLE — Add on Hard Disk System — Up to 28 Megabytes per drive
MODATA ARE LOOKING FOR DEALERS & DISTRIBUTORS

Govt axe falls on Library project

ONE of the biggest and most significant tasks in the world in library automation, the conversion to machine-readable form of the British Museum Reading Room catalogue, should be under way late this year, using a Computer Input by Microfilm system in Newcastle. The British Library's development plans have, however, taken a serious blow in the suspension of the Merlin project, owing to government funding cutbacks.

Merlin is a unified cataloguing system written for ICL mainframes and intended to take over from several separate online and batch services currently using IBM retrieval software from the US such as Elhill, and being offered under the general name Blaise.

According to Kenneth Norman, the British Library's director of computer services, it will be possible to enhance the existing software to do most of what Merlin was intended for, but there will be many messy problems to get around.

Library staff are now also looking at ways of distributing the processing work, by means of intelligent terminals and minis, Norman said. He is trying to interest ICL or Computel, the bureau on which Merlin was being developed, in providing the money to finish the project.

The cataloguing project involves photographing on to microfilm about six million printed or typed entries in the bound volumes that comprise "GK 3", the central catalogue in the Reading Room at Bloomsbury.

This microfilm will be read by the Information International CIM system belonging to the DHSS at Newcastle. Then considerable editing will have to be done by professional librarians, since the catalogue entries go back over many years, during which standards changed, and there have been plenty of hand corrections.

The work is expected to take several years, but when completed it will make possible online searching for practically any book, no matter how old. It should also help get over the Library's enormous cataloguing backlog.

The decision to suspend Merlin was taken after the government cut £599,000 off the British Library's budget of £29 million. According to Norman, the expenditure graph on Merlin was still climbing, and in two or three years even more expense would have been involved in having to run both it and the IBM systems concurrently for a time.

If government belt-tightening were to ease in the future it might be possible to resurrect the project, he added.

Facilities added to Inspec system

ONLINE editing and control facilities are to be added to Inspec's computerised production system for its Science Abstracts journals and database. A PDP-11/70 with VDUs is to be installed to hold the bibliographic information that is being prepared, before passing to the mainframe for typesetting.

An ICL 2956 was installed last week to replace the 1902T that has been doing all the processing hitherto.

Seven special VDUs have been ordered from Logica (CW, August 9), modified versions of the VTS 100 word processor screen, capable of displaying nearly 500 different characters that are used in equations and so forth in Inspec abstracts. These screens will be used by proofreaders for editing and correcting abstracts.

Bulk input will continue to come from the printers on typed sheets for OCR scanning. Other screens will be used for inputting control information for keeping track of the journals that are being abstracted.

When input and corrections are finished, data will be transferred from the PDP-11/70 to the 2956 by magnetic tape for typesetting and for updating the various online services on which Inspec is available.

Midlands firm extends its micro interests

MIDLANDS-BASED computer services group ACT is extending its interests in the minicomputer world. Following the takeover of Commodore software specialist Petsoft earlier this year it is now to start distributing microcomputer hardware products, and provide hardware maintenance and service.

The ACT Petsoft company is to be exclusive UK distributor for Computhink, a US-based company that manufacturers Pet-compatible systems. The prime product will be a 400K byte floppy disc drive, though the agreement also covers a range of memory expansion boards.

Race to get Fastnet results online

PROVIDING an online race information service on the 350 yachts in this week's Fastnet race was a Data General Nova 3 programmed and operated by systems house Datawest Computer Services, of Plymouth.

Getting the system working in time proved to be a race in itself, as the machine originally promised by another supplier was never delivered. Datawest had begun writing the programs for this equipment four months before and had just three days to convert them for the Nova.

The two-VDU system was located in the race office of the Royal Ocean Racing Club and provided both an inquiry service and printed progress reports for race officers and the Press.

Yacht positions were relayed to the race office by the Coastguard and a Dutch destroyer accompanying the fleet, as well as by four of the yachts themselves. Entered online to the system, they enabled times to be calculated within minutes.

EMI pins hopes on fast scan

HOPING to win back its place in the scanner market to ease its tight financial position, EMI is about to start deliveries of the 7070 body scanner from its plant at Northbrook, Chicago.

The 7070, introduced last year with the 7020 (CW, October 5, 1978), is claimed to be able to complete a whole body scan in about two seconds, compared with five for most other systems. Machines have been ordered for hospitals in the UK and the US.

With losses in both its electronics and musical business, EMI has decided not to occupy its new HQ building in London and is also cutting back on other offices, in addition to scanner business the group hopes that a joint music venture with Paramount will mark a change in its fortunes.

ACOUSTIC COUPLERS
In Stock 0734 24715
Contact
MOORE REED & CO. LTD.
Walworth, Andover, Hants
Tel: Andover 4165

Manley

Philips names new UK chief

CHANGES at the top of Philips Data Systems in the UK include the replacement of Dr Richard Horsnell as managing director by Brian Manley who is already managing director of Pye TMC, the telecommunications side of Philips Industries.

Brian Manley has also been made head of a team concerned with planning Philips' activities in the office electronics area.

From September 1 Dr Horsnell will take up what Philips describes as a senior marketing position with the Data Systems Product Division at Apeldoorn in the Netherlands.

IBM plans major expansion in Europe

A MAJOR expansion of IBM's manufacturing plants in Europe is under way this year. This includes Havant, which builds the 3033 processor, the 8100 line and other communications products, and Greenock, where IBM builds VDUs.

In France, the Montpellier, Bordeaux and Essones plants are involved. Montpellier builds the 3031 and 3032 and is expected to build the anticipated cut-down version of the 3033 (CW, July 19). It also builds the 3750 and 1750 telephone switching systems. Essones makes components and Bordeaux makes channels, modems and circuit boards.

In Italy, the Vimercate plant, which will make System 38 and also builds System 34 and 32 and the Office System 6, is covered: and in Spain, Valencia, building tape drives and the 3602 financial controller, is to be expanded.

In West Germany, the Sindelfingen plant making components is included in the programme. Mainz, which builds the 4300s, is not covered.

IBM explains that there was a major expansion at Mainz last year.

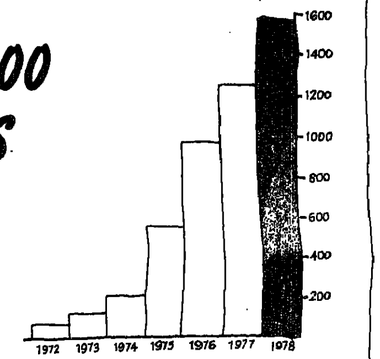
Three systems for Geest

GEEST Computer Services, which already operates IBM, ICL and Honeywell mainframes, has now acquired three Univac machines following its takeover of the Northampton Computer Bureau from cereal manufacturer Weetabix (CW, July 19).

The Univac 90/60 operated by Northampton Computer Bureau at Kettering has now been taken over by Weetabix for its in-house processing while Geest has taken over two other divisions, the Northampton Data Centre at Northampton, which runs a Univac 9400, and the Leicester Computer Bureau at Leicester, which operates a 9400 and a 9300.

Geest already has an IBM 370/135 at Peterborough, a Honeywell 2050 at Birmingham and an ICL 2950 at Cambridge.

MORE THAN 1500 DATA CENTERS WORLDWIDE USE JARS!



THEY USE IT FOR
- Billing Users
- Evaluating Performance
- Planning Resources

For MVS, SVS, VS1, MVT, MFT, DOS/VS, and POWER/VS Systems

The Johnson Job Accounting Report System is easy to use, easy to understand, and adaptable to meet all their requirements.

AND, JARS SUPPORTS CICS/VS AND VM!

For a *FREE* 36 page General Information Manual, mail the coupon below. Better yet, *CALL* Watford 46255

Please send me a JOB ACCOUNTING REPORT SYSTEM General Information Manual.
Name
Title
Company
Address
Phone
CPU Oper. System

Also send me information regarding:
☐ CICS/VS Utilization Monitor and Chargeback System — enables the DP Manager to account accurately and bill equitably for all resources used by each CICS/VS application end user.

Johnson Systems (UK)
10 Station Road, Watford, Herts. WD1 1EG
Watford 46255

Johnson Systems GmbH
Postfach 4528
4000 Düsseldorf 1
West Germany
Tel. 0211/35 10 48
Telex 841-858-2177

Representatives Worldwide

Downtime

Jargon is as jargon does

WE computer people are always being accused of using too much jargon. Personally I think the complaint is quite unfair. Other esoteric professions use jargon even more than we do. Think about it: what you and I call a heart attack doctors call cardiac arrest. According to Dr Rob Buchman, himself a frequent satiriser of medical jargon, a bomb is known by ambulance men as an "echo delta". (Explosive device — ED, get it?)

What we call buying and selling, lawyers call conveyancing, which sounds like something to do with Pickford's (but then it is, when you move house). Hands up who knows what a Writ of Mandamus is, or Ullage and Bottomry.

Pause for relating the only joke I ever heard Vic Feather tell. A factory worker was suing his employers for compensation for injuries he received on the job. As the case went on it became clearer and clearer to the judge that the accident had been the man's own fault, which meant he was not entitled to compensation. Finally, when there was no doubt in his mind about this, he turned to the plaintiff's counsel and asked, "Mr Longbottom, your client does of course realise that 'Volinti non fit injuria'?"

Quick as a flash counsel replied, "M'lud, they speak of little else in Barnsley."

Now where was I? Sociologists are of course among the worst perpetrators of jargon, talking about socio-economically deprived youths when what they mean is poor boys.

The point about our own computer jargon is that is is handy, providing a shorthand way of showing your colleague what complicated idea it is you are talking about. Outsiders complain endlessly about the word "software", but the fact remains that when someone says *"We've got a fault"* and you ask "Hardware or software fault?" and they say "Software" you can tell exactly what they mean.

A highly-nontechnical lady friend of mine has just acquired a word processor in her office, and she is already talking about software and updates, which goes to show how convenient the words are.

●

HAS IBM got a sense of humour after all? An advertisement in the Wall Street Journal aims to show that there are so many different versions available of the word processor OS/6 that they could fill an office building. The advert chooses a fairly obvious building, and describes it thus "The Empire State 197' wide by 424' long by 102 stories high — plus an occasional gorilla."

"This is where we run into hardware problems . . ."

LETTERS TO THE EDITOR

BCS ex-president on IDPM problems

I AM not a member of the IDPM but can genuinely sympathise with their problem over a secretariat. From the foundation of the BCS in 1957 with its handful of members (and honorary secretaries) through to the present time there has been a constant problem of how to provide the most effective office support within available revenue.

There has always been a strain on resources and a few years back it was touch and go whether the society could survive. For the IDPM the problem is what ours was — with the added dimension of inflation to cope with.

I do not profess to know the answer, but doubt whether it is to seek sponsorship from commercial firms who — other considerations apart — if they were each putting up £1,000 (a year, presumably) would inevitably leave their marks on policy.

The BCS has had, and is grateful to, its commercial benefactors — most recently those who helped towards the fitting out of the new headquarters — and indeed it might not exist today if it had not had them. But there is the world of difference between taking *ad hoc* donations and depending on regular gifts to meet the running costs of what must essentially be an independent organisation.

The main lesson learnt by the BCS from its nearness to bankruptcy was that "windfall" receipts should never be relied upon to meet regular and continuing expenditure.

Turning to my own society, the BCS can fairly be criticised on various scores, but not for awarding Fellowships to big names in industry, as implied in Computerview (CW, August 2). Fellowship is a professional grade given "only to Members who can prove their professional activities justify their acceptance as an authority in their particular field of computing" — to quote from the official "Aims and Activities" of the society.

And, Computerview again, will the BCS never be able to nail the canard of academic (as opposed to professional) bias? *Taking the presidential level as* where any bias would most clearly show, if we look at the list since Earl Mountbatten in 1966-67 — the last of the "Eminences" — and include next year's President and Deputy President, we find five Users (accountancy, banking, insurance, Civil Service, commerce), one university chancellor, three professors, three computer/electronics industry and one computer services.

Bias?

C. P. MARKS
President,
British Computer Society,
1975-76.

Civil Service College,
London.

The CASE statement in Pascal and BCPL

I HAVE been following Dr Judy Bishop's articles on Pascal with interest; I suppose that it ranks in the top three programming languages for its power and convenience.

However, I was disturbed by the assertion in Part 6 (CW, August 2), that "the CASE statement does not appear in any other language in this nice form". BCPL, of course, has a proper case statement and, indeed, also has the extremely useful DEFAULT case. I know that this is a common extension in Pascal systems, but only BCPL has it as standard.

So, the example in Figure 2 could be written more simply as

```
SWITCHON ch INTO
$(
CASE 'M': day := mon; ENDCASE
CASE 'T': day := (RDCH()='U' -tues, thurs); ENDCASE
CASE 'W': day := wed; ENDCASE
CASE 'F': day := fri; ENDCASE
CASE 'S': day := (RDCH()= 'A' -sat, sun);   ENDCASE
DEFAULT: error(1)
$)
ch := RDCH() REPEATUNTIL ch = space
```

BPCL also has the advantage (not apparent in this example) that several statements can be included in one CASE without having to bracket them as a separate section, and that execution can be allowed to flow out of one CASE into the following one until an explicit ENDCASE is reached.

PETER ROBINSON

Fendragon Ltd,
Cambridge

Please write...

THE EDITOR welcomes letters commenting on subjects published in Computer Weekly, or on original topics. All letters must be accompanied by the writer's name and address, not necessarily for publication.

Dangers of haste in EFTS

THE excellent article by Morris Edwards deplores lukewarm attitudes which cloud expectations for EFTS in the next 10 years (CW, July 26). Some caution is necessary, in my view, with some of the procedures he mentions.

He refers to a process of "cheque truncation," where cheques are microfilmed by the payer bank and then destroyed. There are occasions when a private citizen or a small company may need to have access to an original cheque after payment, to prove that the payment was made properly at the correct time, and that it may have gone to the wrong account. A microfilm print would not be such good evidence.

I applaud the development of EFTS for payment by companies of regular suppliers, salaries and wages, and dividends to shareholders, where there are clearly established data-flow controls with adequate internal-audit cross-checks. But in smaller organisations, if there are changes of staff, errors inevitably occur, and an ability to trace the original cheque can supply proof of payment.

In a recent consultancy assignment, a small client-company's bought ledger had been badly kept on a service bureau computer. One account had been paid twice — once on the normal computer run, delayed by holidays, and once by hand in response to a red-letter statement. Recovery of the overpayment, to a one-time small supplier, was difficult, because the supplier had paid the second cheque into his private account! My client's ability to show both cheques to solicitors led to recovery of the overpayment of some £400.

The paid cheques are in my view an essential part of the audit trail for all payments not originated by EFTS.

HAROLD W. G. GEARING

Malvern,
Worcs.

THREE REACTIONS TO AN OPERATOR'S PLIGHT

Career 'progression' to blame

I WAS very interested to read the piece on the operator who, despite considerable valuable experience as an operator and despite having had the initiative to enter on a Tops programming course, has still not found a programming job after nearly 150 applications (Programmer Notes, August 2).

He may just have been unfortunate, but if we look at another worse, but in some ways comparable situation, one could conclude that much of the DP staff shortage blame can be laid at the doors of both general and board level management.

This even worse situation is characterised by the so-called "progression" of job titles — operator, programmer, analyst, DPM — then what? How many DPMs have been shovelled on to the streets because they have found themselves in a firm which really doesn't understand computers or is not prepared to commit itself wholeheartedly to them or in a firm where most of the time is spent playing politics or manoeuvring for position? And more importantly, what happens to our erstwhile DPM when he does find himself marching up to the counter of his local job centre? He's going to feel bitter, victimised and distrustful of the DP industry itself — just like our operator trying to get a programming job.

Which brings me to the subject of that stultified, complacent and inwards-looking society, the British Computer Society, from which I was happy to resign over 20 years ago. This society, under the guise of helping the computer industry, is at least partly responsible for not taking a lead in helping the staff in the industry.

The attitude of the BCS is plain enough for all to see, if I quote just one passage from a letter written by the deputy-president elect of the society, Frank Hooper, to Computing. He wrote, "One day perhaps we could all insist that only holders of MBCS or FBCS would be *allowed* to market computer equipment" (the italics are mine). This typifies the arrogant, hypocritical and holier-than-thou attitudes of the BCS.

How many fundamentally competent people are forced into what amounts to a begging situation by attitudes over which they cannot be expected to have any control and just what is officialdom (and the wonderful BCS) going to need to stir itself to stop what amounts to a disgraceful waste of the country's resources?

ROBERT T. STREET

Woking,
Surrey.

Interview offered

I WAS surprised to read of the case of the ex-operator attempting to become a programmer finding it so difficult to obtain an interview (Programmer Notes, August 2). If the person concerned would be interested in working in the Cheltenham area, and would care to send us his or her details, we would certainly give consideration to arranging an interview.

J. M. CAINES

J. M. Caines Associates Ltd,
Jessop House,
30 Cambray Place,
Cheltenham, GL50 1JP.

Buy a micro and do your own thing

FURTHER to my article, "We must see to it that programmers are trained in their art" (CW, April 19), the operator mentioned in Programmer Notes (CW, August 2) would do well to buy a microcomputer supporting Cobol or Fortran and, while being employed as an operator, write programs on his micro. Then he should apply, not for a job as a trainee programmer, but simply as a programmer, *offering to send listings of programs he has written.*

Alternatively, he could write programs for small businesses in his locality, thus developing both his expertise and his pocketbook.

In conclusion, I should like to add that the "closed shop" of the computer industry is largely based on the fear of using incompetent staff on costly projects. Sheer lack of staff will compel the industry to reconsider its attitudes, and I have no doubt that in three to four years we shall see considerable numbers of microcomputer-trained programmers coming on to the market.

We professionals shall have to look to our laurels.

J. M. HAMILTON

Director,
Datavise Ltd,
Bath.

DIGITAL □ NEWBURY LABS □ TEXAS DATA DYNAMICS □ A J □ TRANSDATA HEWLETT PACKARD □ A M JACQUARD FACIT ADDO □ MELLORDATA

Special to August 31st

TEXAS INST. 745
12 months rental £60 p.m.

TELETYPE 43
12 months rental £49 p.m.

TALLY 1612 (180 c.p.s.)
12 months rental £95 p.m.

Prices include full maintenance cover

For more information contact Mike Brooke, Telephone BYFLEET 53151 & 49618

MBS Rentals

Specialists in the renting of terminals

MBS Rentals, Aldwych House, Madeira Road, West Byfleet, Surrey KT14 6BA

What has The Times achieved in return for this £25 million stoppage?

RORY JOHNSTON looks at the prospects for the future of The Times and how much — or how little — the suspension has achieved.

PROSPECTS for the return of The Times have been getting alternately brighter and dimmer like a Belisha beacon for such a long time that no one would be prepared to bet anything substantial on the present situation. But it certainly appears that, with the rank and file of only one union left to ratify the return-to-work formula, a re-start in September is very much on the cards.

It would indeed be a calamity if, having got so far, the negotiators were unable now to make enough minor changes to accommodate the members of Natsopa, whose reaction to the formula, in opposition to their national officers, has been distinctly cool.

Two different attitudes have been evident in the two main branches of the union. The machine room men (printing press operators) have been mainly concerned to get more money, regarding themselves as underpaid compared to the rest of Fleet Street, and the agreement does not provide that increase. On the other hand, the clerical branch is worried that the agreement commits them to operating new equipment, entailing the loss of about 55 jobs, before terms for pay, hours, redundancy, and so on have been worked out. One machine, an ICL 2903 for administrative DP, has been standing idle for four years waiting for a settlement on its operation to be reached. Since over half the 4,000 Times staff are members of Natsopa, it is by no means certain a solution will be found.

Assuming, however, that a solution is found, the obvious question that then arises is, what has The Times achieved in return for the £25 million and ten months of "aggro" the suspension will have cost? The answer can only be, exceedingly little.

The unions have agreed to the need for a common disputes procedure and a means of ensuring continuous production without interruption by unofficial strikes. But they have always admitted this. They have even agreed that there is a need to reduce overmanning. The problem in all these is what should the terms be. Management's stance in having a shutdown was that they would not carry on production until these matters were settled — and they have not been.

The most difficult issue of all, that of direct input by journalists into the typesetting system, has been deferred, with no guarantee that a solution will be found. Management's aim was in one sweeping operation to clear up all the operational difficulties that plague Fleet Street, and that has failed, although there is always a chance that subsequent negotiations will make progress along those lines.

From a purely objective, scientific point of view, management's aims are totally rational. Printing plants are seriously overmanned, the technology they use (both the equipment and the working methods) is antediluvian, and newspapers have been dying left and right for decades, through competition with radio and TV. Rationality evaporates, however, when labour problems have to be considered.

The degree of bitterness felt towards management by many of the trade unionists can easily make one wonder how a business can operate at all in such an atmosphere. Behind the unionists' stance on any negotiations is a political attitude of "them against us", which leads them to attack not management's proposals but their motives for such proposals.

It is commonly claimed that The Times only wants to bring in new technology to weaken the power of the unions. Jake Eccleston, father of The Times journalists' chapel, goes farther and says the company is "interested in the monopolisation of information, and bigger profits."

However, there is a more serious, in fact fundamental, problem facing the union leaders — that if automation reduces the number of jobs, then unions will lose members; and that they cannot countenance. In the case of the compositors, whose jobs would be completely eliminated in the long term, the National Graphical Association would be wiped out. There is no way the NGA would acquiesce to this, and were management to try to press ahead without them, the principle of union solidarity would lead all other workers to down tools in support, regardless of logic.

The scientific truth that the world no longer needs compositors has to give way to the political truth that other unions must be supported in their fights with management, no matter how unsound their stance.

Unionists differ over the soundness of the NGA's stance. Ecclestone claims that direct input would necessarily lead to lower editorial standards, which is clearly nonsense, and adds, "I don't think a journalist is a printer," overlooking the fact that new technology inevitably changes demarcation lines.

On the other hand Chris Robbins, secretary of the Natsopa London Clerical branch, says that direct input is "absolutely inevitable" in the long term, adding that humanitarian concerns are the current problem. He is sceptical of redundancy payments schemes, citing the number of his former members who come back to him after two years, their money all gone, desperate to get back to work.

The situation, in short, is impossible. The UK Press must cut costs substantially in order to survive, but there is no way the unions will agree to lose many members. Some unionists want the new technology brought in, not so that fewer people can produce the same number of newspapers, but so that the same number of people produce more papers. They do not explain how all the other costs, apart from the wages of the printers, could be covered, or how the public could be persuaded to buy or read all the new titles.

The logical course of action, starting all over again at the beginning in setting up The Times, is apparently not feasible politically.

Will it take the death of our entire newspaper industry to convince people that the politics is ludicrous? Possibly so.

ICL sticks to W Gorton project

FOLLOWING the government's *plans* to cut back on investment *grants in intermediate* development areas, ICL is reviewing its plans to reconstruct the old mill and other buildings on its West Gorton, Manchester, site (CW, July 26).

Despite statements attributed in the Manchester press to former Industry Minister Gerald Kaufman, there is no question of abandoning the project altogether, and no threat to employment by ICL.

The problem for ICL is nevertheless serious, because according to the Department of Industry, the company will not now get £1.5 million of the money it was expecting to receive in development grants. ICL is therefore investigating other ways of raising the money, and possibly scaling down the scope of redevelopment.

The new ICL production plants in Manchester are almost complete, and production workers will be moving out of West Gorton shortly. Thereafter it will become a research and development centre.

Local MP Kaufman, Member for Ardwick, commented that a factory which would have gone ahead and provided perhaps 1,500 jobs had Labour remained in office, had now been thrown into doubt as a result of Conservative policy.

ICL emphasises that no decision has yet been taken but that no threat to employment exists — although clearly if the plans are scaled down, fewer construction workers will be required on the building project.

Labour to debate micros

BOTH the Labour Party and the TUC are to debate microelectronics and new technology at their annual conferences in the next few weeks.

The Labour Party will debate resolutions calling for an immediate investigation of the implications of microprocessors, especially in providing a means of improving living standards and communications. There will also be a call for a positive programme for the 1980s and 1990s to help combat the difficulties created by the silicon chip.

One resolution will demand that the National Enterprise Board and the Scottish Development Agency are used to invest in the electronics industry.

At the TUC Congress, the subject will be debated no less than seven times. These will include motions calling for a strategy to deal with the deep social changes that will take place, and full public ownership of this industry through the NEB.

Award to brewery manager

WHEN Barry Dumble was named runner-up in this year's Data Processing Manager of the Year competition, there was only one logical place for the presentation — his computer room at Vaux Breweries, Sunderland.

Barry (left) is pictured receiving his award, a set of lead crystal glasses, inscribed silver tray and a £150 cheque, from the chairman of the Institute of Data Processing Management, Neville Taylor.

"The competition, run annually by the Institute and sponsored by Data Logic, is for achievements in computer management. Barry was nominated runner-up for successfully introducing a number of key online systems on Honeywell 64/30 which are making "a substantial contribution to his company's operation and enhancement of its service to customers."

Manchester Business School

New approaches to Systems Analysis & Design

Course tutor: Enid Mumford M.A., Ph.D., C.I.P.M.

A one-day seminar for systems analysts and users in administration, commerce and industry who are interested in techniques to assist user involvement in systems design and in improving user job satisfaction through good design.

SEMINAR DATES-Wed 29th Aug, Wed 19th Sept, Fri 19th Oct

For further details, please cut out this advertisement, insert your name, address and tel.no. below, and post to:- Professor Enid Mumford, Manchester Business School, Booth Street West, Manchester, M15 6PB Tel. 061-273 8228

Euronet due to start in October

FINAL acceptance testing of the Euronet packet switched network has started, and commercial service is now due to begin in October. Infoline, the UK online bibliographic retrieval service, claims to have implemented the first host connection to Euronet.

Infoline is already connected to the Post Office's International Packet Switched Service, but needs to test its X25 interface on Euronet to ensure that minor differences in the implementation of the packet switching standard do not cause problems.

The National Physical Laboratory and other subscribers to the experimental European Informatics Network are also preparing to cut over to Euronet.

In the UK, inquiries and requests for access to Euronet have exceeded estimates and urgent steps are being taken to increase the number of ports available on the London node from the initial 12, which are now fully booked.

Access during the final tests will be free of charge. After full acceptance from the contractors, the standard charge will be 2.2 pence per minute plus 1.2 pence per 10 64-byte segments, with reductions at night and weekends.

Plessey introduces range of DEC add-ons

A WIDE range of hardware add-on systems for Digital *Equipment* minicomputers has been produced by Plessey Peripheral Systems. They range from interface, memory and control boards up to a general purpose microcomputer.

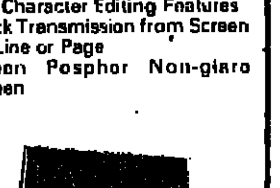
The latter is based on either the DEC LSI-11 or LSI-11/23 processor board, and includes two single or dual density floppy disc drives. It is also capable of supporting a five or ten Megabyte hard disc sub-system.

The range of add-on subsystems extends from an RP11-compatible disc controller, capable of handling two storage modules of up to 300M bytes each directly; through 256K byte and 24K byte memory boards; Q-bus serial line interfaces; to a 1.5M byte disc emulator.

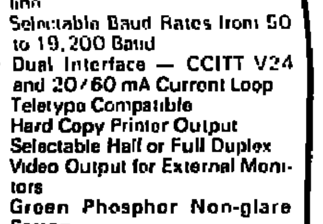
NEWBURY

SMART MICRO-BASED VISUAL DISPLAY TERMINALS

Model 7007-7009
- ★ British design and manufacture
- ★ Based on 8080A Microprocessor
- ★ Two-page Memory 3,840 characters
- ★ 24 Displayed line of 80 characters per line
- ★ Switchable Transmission Speeds from 50 Baud to 19,200 Baud
- ★ Split Speed Transmission Mode
- ★ *Dual Interface* — CCITT V24 and 20/60 mA Current Loop
- ★ Hard Copy Printer Output
- ★ Protected Field Format — Blink — Background or Half Brightness
- ★ XY Cursor Address (send and receive)
- ★ Roll or Page Mode
- ★ Video Output for External Monitors
- ★ Full Character Editing Features
- ★ Block Transmission from Screen by Line or Page
- ★ Green Phosphor Non-glare screen



Models 7001-7002
- ★ 24 Lines of 80 characters per line
- ★ Selectable Baud Rates from 50 to 19,200 Baud
- ★ Dual Interface — CCITT V24 and 20/60 mA Current Loop
- ★ Teletype Compatible
- ★ Hard Copy Printer Output
- ★ Selectable Half or Full Duplex
- ★ Video Output for External Monitors
- ★ Green Phosphor Non-glare Screen



Model 7000
- ★ Teletype Compatible
- ★ 24 Lines of 80 Characters per line
- ★ Selectable Baud Rates from 60 to 19,200 Baud
- ★ CCITT V24 Interface
- ★ Selectable Half or Full Duplex
- ★ Green Phosphor Non-glare screen

PRICES FROM £495

NEWBURY LABORATORIES LTD HEAD OFFICE & SALES KING STREET ODIHAM HAMPSHIRE

TEL: 025-671 2910
TELEX: 858815

Manufacturer: Arnhem Road, Newbury, Berkshire RG14 5RU Tel: 0635 46864
Service Centre: Bone Lane, Newbury, Berkshire RG14 5SH Tel: 0635 46898
Northern Area Sales & Service: 2 Sadley Road, Cheadle, Cheshire, SK8 1PY Tel: 061-491 0134

GILB'S MYTHODOLOGY

Realistic time/cost data

IN my last column (CW, August 12), I made some opening arguments for the method of evolutionary planning and system delivery. Here are some more points I would like you to consider:

In evolutionary planning, the actual detailed planning is spread throughout the implementation process. Only top-level ("global", I call it) planning is carried out for the entire project initially. Final-result goals are set, in measured quantitative form, so as to give controlled navigation to all phases of planning and delivery.

There is a global outline of the steps and resources needed for the entire project. But only the first deliverable step is analysed and designed in great enough detail to allow construction of a working system.

In larger projects, even this first implementable step in the global plan might have to be exploded into sub-steps, and the first of these sub-steps might be the only one which is planned and detailed totally through to implementation, before any other really detailed work is considered for the following steps.

This way of planning is unlike our traditional formal planning life cycle. But I believe that it has advantages which dictate its choice for large and/or critical projects.

In a nutshell, it provides analysis data from the real world, which can be fed forward to future step designs and plans. This can save total analysis effort and make our designs more realistic.

Consider how this method affects the traditional problem of making time and cost estimates for a large project. With early partial implementation of a real system in the real user environment we have access to realistic time and cost data.

We are at liberty to compare these realities with our initial estimates, noting the degree of error and making corresponding adjustments in the rest of our global project estimates. Thus if the time and cost of the first of 20 phases amount to twice the estimate, we could decide to adjust our long-term estimates, as well as the immediate future phases, by an additional 100%.

This might lead to killing the project, but at only 5% of the total project cost expended. It might lead to management acceptance of a new budget and timescale, at this early stage of the project — in which case an unrealistic pressure and responsibility is removed from the implementor's shoulders. I am speaking from practical experience, rather than philosophical speculation.

This method leads to a dynamic, rather than static, situation in which estimates are constantly being refined during the project. Estimates are based on experience, and management can and will have more confidence in them then in any other type. It follows that since estimates are refined throughout the project, the final result corresponds closely with the latest adjusted estimates. In other words, we are less likely to find people reminding us of our original guesstimates.

The fact that inexperienced system planners (and we will have more, before we get fewer, of them) are confronted early with realities of implementation, and if their inability to estimate realistically, may be argument enough for this method today.

Finally, even when the delivery date estimates are wrong and we are late with delivery of the final steps, it is rarely so critical a situation as we are accustomed to. The user has something like 80% of the global plan and 95% of his important needs covered by the time you reach the scheduled final delivery date. He will not be screaming for delivery. More likely he will be struggling to make use of what is already delivered.

Evolutionary system development has a lot to be said for it. Even the omnipotent Creator of Mankind uses it. Who are we to consistently use more revolutionary methods?

Don't let your salesman's yearly quota needs influence your planning.

HAMILTON

For sale or rent.

TERMINALS	MONTHLY RENTALS FROM 3 months	6 months	12 months	SALE
DIGITAL				
LA34 DECwriter IV	87	65	55	875
LA36 DECwriter II	87	65	55	875
LS120 DECwriter III	135	99	85	1785
LA120 DECwriter III	160	115	95	1695
LA180 DECwriter I	129	96	80	1599
VT52 DECscope	86	64	54	
VT100 VDU	98	70	59	1069
VT132 VDU	116	85	70	1259
TEXAS				
733 ASR	180	135	109	2250
743 KSR	68	66	51	1105
745 Portable Acoustic Coupler & EIA	120	90	74	1395
763 KSR 20K Bubble Memory	180	135	104	2195
765 Portable 20K Bubble Memory	210	160	119	2395
810A Printer	145	107	89	1650
820 KSR	170	120	100	1790
HAZELTINE				
1400 VDU	50	38	34	550
1500 VDU	72	54	45	785
1510 VDU	80	58	50	880
1520 VDU	90	70	59	1060
TECHTRAN				
950 Floppy Disc Unit	85	65	55	895
951 Floppy Disc Unit	105	75	65	1225
8421 Dual Cassette	130	102	87	1695
815 Single Cassette	58	44	37	725
MIDLECTRON				
M22 Reader/Punch Unit	84	63	52	975
DIABLO				
1620 Hyterm	186	140	117	2275
1641 Hyterm ASCII/IBM 2741	216	162	135	2580
LEAR SIEGLER				
ADM 3A VDU	54	40	36	595
TELETYPE				
Model 43 Printer	96	72	60	825
HEWLETT PACKARD				
2621A VDU	85	65	55	945
2621P With Printer	148	112	95	1660
2635A	196	147	123	2160
2641 APL/ASCII	240	180	150	2687
2645A	208	156	130	2191
2647A	475	328	298	5198
2648A Graphics	320	240	199	3443

GRAPHICS DISPLAY TERMINALS	MONTHLY RENTALS FROM 3 months	6 months	12 months	SALE
TEKTRONIX				
4006-1	200	150	131	
4010-1	323	243	212	
4012	424	317	277	
4013 ASCII/APL	457	342	300	
4014-1	760	571	523	
4015-1 ASCII/APL	829	622	567	
4016-1	1311	945	790	
4631 Hard Copy Unit	281	210	189	
4662 X-Y Plotter	266	200	184	
4663 Interactive Plotter	625	469	393	
4954 Graphic Tablet	347	260	228	
4027 Colour Graphics Terminal	564	420	352	
4051 Graphic Computing System	389	292	257	
DESK TOP COMPUTERS				
HEWLETT PACKARD				
9815S	[illegible]	[illegible]	140	2354
9825A	[illegible]	239	210	3538
9830	490	290	240	
9835A	525	395	360	6010
9845S	1160	870	725	10845
9862A X-Y Plotter	221	162	135	
9866B Thermal Printer	216	162	135	
9871A Printer/Plotter	240	180	150	
9872A 4 Pen Printer/Plotter	284	216	180	3160
9873A Digitiser	[illegible]	250	210	3885
9875A Dual Tape Cartridge Drive	165	125	105	3057
9876A Thermal Printer	198	148	126	2199
9878A I/O Expander	68	51	43	752
9885M Flexible Disc Drive Master	221	165	139	2065
7245 Thermal Plotter/Printer	260	195	160	2815
MINI COMPUTERS				
DIGITAL				
PDP11/V03	595	429	357	6822
PDP11/T03	1075	791	659	12020
PDP11/34	1582	1149	1053	
WORD PROCESSORS				
DIGITAL				
WD78 Dual Floppy Disc, VDU, Printer, Communications	750	575	475	8975
WD212 Multi-Terminal, Shared Facility System			1122	22423
TYPEWRITERS				
IBM 895	54	40	34	727
Sperry Remington SR101	52	38	32	[illegible]

All prices quoted exclusive VAT

HAMILTON RENTALS SERVICE SALES

Telephone: 01-450 8900.

PARIS 1.581.00.20 · BIRMINGHAM 021-236 3561 · MANCHESTER 061-848 8338 · ABERDEEN 0224 25301 · CEN. SCOTLAND 0501 43182

PROGRAMMER NOTES

Ownership of copyright

A CONTRACT programmer will, in general, own any programs he writes while working under a straightforward contract for services.

This was one of the surprising points made by Professor Brian Niblett, of University College, Swansea, while discussing software and copyright at a recent CSA meeting in Oxford.

"Although computer programs are not specifically referred to in the 1956 Copyright Act, the general opinion is that they can be protected under the Act as literary works.

"In this case, the standard copyright rule operates under which the first owner is the author."

However, most contracts for permanent employment specified that copyright would automatically be vested in the employer; and a clause to this effect could also be inserted in freelance contracts, he noted.

Without it, though, the programmer would automatically own the copyright to any programs he produced.

The protection afforded by copyright lasts for at least 50 years and is far-reaching in scope.

Owning copyright, for example, confers the exclusive right to copy, adapt, or reproduce in mechanical form. It also covers translation, which, Professor Niblett argued, would include the re-writing of the program in another programming language.

Literary copyright in addition applies to anthologies, viz selections made from existing copyrighted works. In software terms, this would mean that if you take a set of subroutines — with the permission of the copyright owners — and assemble them into a whole, then you can have copyright in the program created.

Professor Niblett identified two areas in which the application of copyright to software was problematical.

One was where a program existed only in magnetic notation, for example in the case of a transient program created in core. It was doubtful, he said, that copyright could exist in this case.

It also seemed clear that copyright would not apply if you could find a way to use a program without copying it.

Just as reading a book does not break copyright, neither does using a program, so that if you could find a way to use it, a program without copying it, it would probably not constitute an infringement of copyright.

SOFTWARE FILE

By Peter Hewitt

More distributed processing options

EMPHASISING that there are many ways to bite the distributed processing bullet, the last few months have yielded a rich crop of software enhancements for terminal, data entry and communications equipment that give users significantly greater flexibility in the design of distributed applications.

Manufacturers that have enhanced their products in this direction include Data Logic, Data 100, Mohawk Data Sciences, Datapoint Corp and Harris.

One of the major announcements was Raysolve, a multi-task operating system written by Data Logic for the Raytheon Cossor PTS 100. Raysolve gives the PTS 100 substantial local processing capability, oriented particularly to data entry applications.

A strong feature is a parameter-driven format generator, which enables the user to specify input screen images along with validation and verification rules.

A full range of data manipulation facilities is available to the user and the system supports five file organisations, including indexed sequential and random.

Raysolve uses the existing IBM, ICL and Burroughs emulators and can handle remote or local applications — on or offline — at the same time. It runs on a minimum configuration including a 48K byte PTS processor, one diskette and two VDUs.

Data 100 has enhanced its operating software on both the Keybatch data entry system and the Model 85 attached applications processor.

One of the chief Keybatch enhancements relates to concurrent file manipulation and data entry, for example, allowing the data entry supervisor to update ISTR files without shutting down the system. Another innovation is that magnetic tape is now supported for communications operations.

Enhancements to the Model 85 multi-tasking operating system are mainly in the area of RPG II support, increasing its compatibility with mainframe versions.

Data 100 has also added an ICL 7502/3 emulator to the Model 76 and 78 terminal systems.

Both Mohawk Data Sciences and Datapoint have released new IBM emulators. The MDS System 21/40 and System 21/50 can now emulate the IBM 3270 family, with modules handling display station emulation and network interfacing, and a batch utilities package.

MDS has also announced a basic asynchronous emulator. This enables a Series 21 operator station to function as a non-intelligent terminal, communicating with a mainframe one character at a time in batch mode.

The new Datapoint software, available with the 1500 Dispersed Processor, emulates the IBM 3275 Model 2. Using it, a 1500 can direct the execution of mainframe 3270 or 3275 programs without any modifications in mainframe hardware or software.

Among a number of new facilities from Harris is an online editing package for the 1600 DDP system. It offers standard screen formats for Ansi Cobol and IBM 360/370 Assembler and is intended particularly to provide an alternative to the use of TSO for application program development.

When fully edited, the source program can be passed to the mainframe for execution.

Spanning IBM OS job scheduling market

THE addition of a job networking facility to Span Software Consultant's execution monitor, Spanex, has brought it into the now hotly contested UK market for IBM OS job scheduling and control systems.

Spanex, which supervises both batch and TSO work, runs under the OS/VS1, SVS and MVS operating systems. A key feature is the presentation of a standard error-handling interface to the operator; together with a comprehensive restart capability, this allows recovery decisions to be taken automatically.

The package also provides facilities for operator control of job steps, program authorisation, and swappability. As a by-product of these activities, and in conjunction with another Span package, Spamfinf, Spanex can generate such system statistics as CPU time, paging and EXCP reports.

Span has now enhanced the product bringing it into more direct competition with software such as Johnson's Apex (Software File, July 12) and the Value range sold by RTZ Computer Services.

Central to the new capabilities is a job networking facility. This allows for the definition and control of the logical inter-relationships between jobs in a suite; Spanex will then create and execute jobs conditional upon the successful completion of earlier prerequisite, jobs.

As the networking facility is integrated with the restart facility, Spanex can now take over all aspects of the control of an application suite, including recovery from both software and hardware errors.

Span, which originally acquired Spanex from CRM, of Italy, sells a permanent licence to the product for £5,500, including free maintenance and enhancement for the first year. The package can also be rented.

SOFT BITS

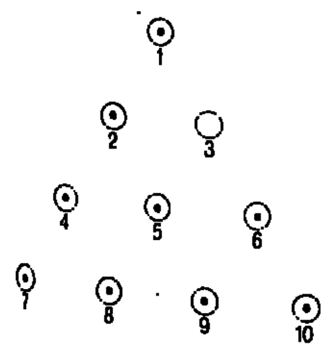
Abacus packs for TEI users

A FINANCIAL accounting system and compilers for Algol and Pascal have been launched by Abacus for the TEI range of microcomputers. Capable of handling sales, purchase, and nominal ledger functions, the accounting suite is written in CIS Cobol, the Micro Focus product.

The Pascal version offered is the UCSD interpreter and joins existing Basic, Fortran and Cobol software.

A NEW company specialising in formal software design methods has been set up by Mayer Wantman following his resignation as managing director of Infotech Methods Ltd. Called 3D Systems, its main aim will be to assist companies which are adopting data driven design methods.

Puzzler

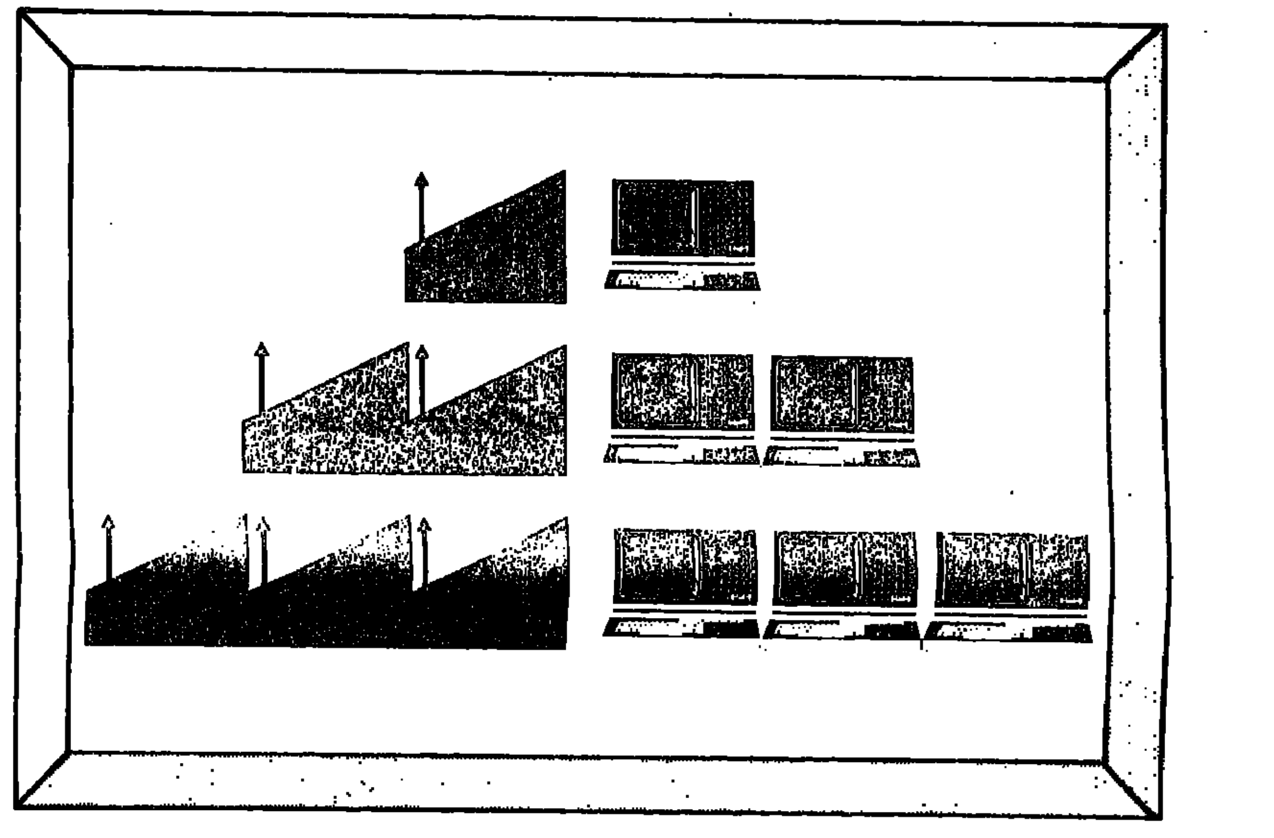


THIS triangular solitaire board has 10 holes (numbered to enable manoeuvres to be written down) one of them empty and each of the others filled by a peg. The problem is to clear eight pegs off using only five draughts-type jumps or multiple-jumps. Each jumped peg is immediately removed from the board, as in draughts.

Here is a good try that shifts eight pegs in six moves: 10-3, 8-10, 1-6, 10-3, 4-6-1-4, 7-2.

See page 45 for the optimum five-move solution.

CMC SOVEREIGN grows on you



And without expensive software or hardware upgrades either!

Needing a bigger system to support a bigger operation you just hook on another processor ...8K ...16K ...32K ...64K. This immediately becomes a self-supporting unit within the SOVEREIGN set-up while increasing system power.

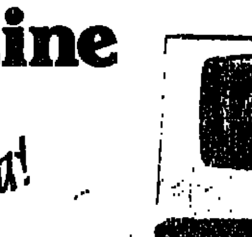
CMC SOVEREIGN for
- high-speed data entry
- sophisticated transaction processing
- efficient data base management
- comprehensive data communication
- high-level language user programming

all on one system, too.

1969 CMC 1979 Data Preparation Distributed Processing Business Systems

Head Office and Manufacturing
Maxted Close, Hemel Hempstead, Herts HP2 7LA
Telephone 0442 61266

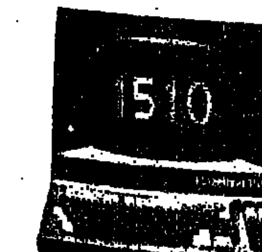
Hazeltine Just Right! Terminals



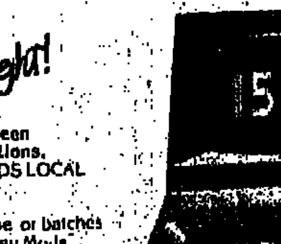
Just Right!
H1400
... for data enquiry and data entry applications.
LOW COST HIGHLY RELIABLE
Features include.
*24x80 Screen Configuration
*64 Displayable characters
*Cursor addressing and sensing
*Remote Commands

Just Right!
H1410
... for numeric data entry applications.
1400 ECONOMY 1500 STYLE
Features include.
*Separate numeric pad
*Self test feature (also 1400)
*Enhanced cosmetics
Plus all the 1400 features

Just Right!
H1500
... for enhanced data processing applications.
FULL-FEATURED CONVERSATIONAL
Features include
*Upper and Lower case
*Dual Intensity
*High Resolution 7x10 Dot Matrix
Plus all the 1410 features



Just Right!
H1510
... for buffered screen formatting applications.
PROTECTED FIELDS LOCAL EDITING
Features include:
*Transmit Page/line or batches
*Select Function Key Mode
*Cursor control keys
Plus all the 1500 features



Just Right!
H1520
... for VDU with printing requirement sharing a communication line.
INDEPENDENT CONTROL PRODUCTIVITY
Features include:
*Serial and parallel printer interfaces
*Independent printer/communications speeds
*Local or on-line printing.
Plus all the 1510 features.

Hazeltine
Hazeltine Limited, Terminal House, 14 Petersham Road, Richmond, Surrey TW2 5RR. Tel No 01 948 3111. Telex 928572

Distributors
Hamilton Rentals Ltd, Station House, Neasden Lane, London NW10 1PH. Tel No 01 450 8900
EAST MIDLANDS Arc Computer Supplies Ltd, 7 Houghton Parade, Dunstable LU6 1DA. Tel No 0582 608514
N.W. ENGLAND Management Control Systems Ltd, 3 Wyneslay Close, Fallowfield, Manchester M14 6RG. Tel No 061 248 7100
N.E. ENGLAND Holdelis Ltd, 10 Blenheim Terrace, Woodhouse Lane, Leeds 2. Tel No 0532 459459
S.E. ENGLAND Rair Ltd, 22 Neal Street, London WC2H 9PS
S.W. ENGLAND Wilkes Computing Ltd, Bush House, 72 Prince Street, Bristol BS1 4HU. Tel No 0272 25921
IRELAND Technico Communications Ltd, Astral House, Adelaide Road, Dublin 2, Ireland. Tel No Dublin 688222 Telex 5129

MICRO NEWS — By Martin Banks

Dual CPU system for UK

A SMALL business system using a dual processor configuration and costing under £3,000 has been introduced into this country by Computrade of Leatherhead.

Called the Superbrain, and manufactured by Intertec Data Systems of Columbia, South Carolina, the system uses two Zilog Z80A microprocessors. One operates as the host processor of the system, and runs all operating and user software. The second processor is the disc controller, running the operation of the integral dual floppy disc drives.

The basic Superbrain comes with 64K bytes of memory, 12 inch screen and keyboard, as well as the dual density floppies, which offer an additional 320K bytes of store. Serial, parallel and S100 interface ports are also provided, which allow the attachment of printers, and in excess of 10M bytes of hard disc storage.

Using the popular CP/M operating system, a wide range of software is available for the system, including Fortran, Cobol, Basic and APL high level languages. In addition, applications programs for payroll, accounts receivable, accounts payable, inventory control, general ledger and word processing are also available.

Computrade's marketing plans for the Superbrain include the appointment of separate dealers that will specialise in selling the system, as well as retailing it through the existing distributor network.

THOUGH it does not somehow seem the same in black and white this is the new Green Screen for the Commodore Pet, now being marketed in the UK by Petsoft. A contrast-enhancing filter made of perspex, it can be fitted directly over the top of the existing Pet Screen. According to Petsoft, it filters out ambient light on the screen, making it legible in direct sunlight, and tints the displayed characters green, which is the peak sensitivity band of the human eye.

RUF to be Pet dealer

CROWBOROUGH based RUF Computers has been appointed as a main dealer and distributor of the Commodore Pet microcomputer.

The company — its name is pronounced "roof" — has recently been taken over by Scan Data International, the first move by that company into the packaged small machine marketplace. The appointment is thought to be the first by Commodore of a general systems house to Pet dealership.

Peter Beckett, managing director of RUF, feels that the association with the systems house will give his company an edge over shop-based retailers in advising customers on the use of microcomputers for commercial accounts work. A microcomputer manager, Steve Cooper, has been appointed to head up the operation.

Plain English solution to software problem

THE widely discussed problem of software for small business applications of microcomputers could find a solution next month, when California-based Personal Software starts marketing Visicalc.

Developed by another US company, Software Arts, this package is aimed directly at the growing small business market, especially in the area of the manipulation of numeric data. Its prime advantage for the microcomputer scene, where a large percentage of potential users are not computer specialists, is that programs can be developed using plain English, even though the package is actually written in machine code.

Available on floppy disc for \$99.50 in the US, it is expected to be introduced into the UK soon after its September launch in America.

Personal Software products are available in the UK through a number of distributors, including the Byte Shop, Petsoft, T & V Johnson and Keen Computers.

Initially it will be available only for the Apple II computer, but there are already plans to make versions for the Pet and Tandy TRS 80.

In use, Visicalc creates on the video display an electronic "blackboard" with many rows and many columns. The size of this grid far exceeds the size of the screen, which only portrays sections of it at a time.

Any square in this grid can then be defined as a label, a value, or a function. In this way, in applications such as financial analysis, the label can be used to define such items as a company name, the value can be used to define a series of financial results such as turnover for the last two years, and the function can be used to define a relationship between any other squares on the grid — in this case the function could be a percentage calculation between the two turnover figures.

It is being claimed that Visicalc can dramatically speed up the program writing process, and that the programs can be written by anybody, with or without the relevant programming skills.

PROM-zapping

ZAPPING the memory of 104 ultra-violet erasable PROMs simultaneously is now possible with the 100T PROM eraser from Microsystems Services.

Able to accommodate either the 104 individual devices, or a complete circuit board, the 100T can be set to expose the memories to ultra-violet light for up to 40 minutes.

Packages for Apples

TWO software additions to the Apple II computer are now being marketed in this country by Apple dealer Personal Computers. One takes the system into the medical education field, while the second allows an Apple to be used as a simulator for the Tektronix 4010 family of terminals.

The medical training program has been developed by the Milliken Communications Corp in America, and consists of a series of computer-based seminars that simulate a conversation between a student and lecturer.

The seminars are stored on floppy discs and are available in three basic categories: surgery, internal medicine and primary care. A total of 40 individual topics are covered on two discs, each costing £14.50, each topic providing a tutorial session of about an hour's duration.

They require active participation by the student, who has to respond in his/her own words to the questions via the keyboard. If the answer shows familiarity with the subject, the program moves on to the next part of the tutorial; otherwise, more detailed information is given.

The Tektronix simulator, called Teksim, enables an Apple to be used as a terminal of a host computer to display high resolution colour graphics with minor changes to the programs running in the host.

Costing £300, Teksim comes as a plug-in read-only memory and a special adaptor unit. Its characters have been designed to simulate as closely as possible the Tektronix hardware characters to ensure program compatibility.

This does involve a compromise, in that a Teksim-equipped Apple can display 32 lines of 68 characters, while a Tektronix terminal can display 35 lines of 73 characters. There is a chance, therefore, that display overflow and wraparound will occur, though for most graphics applications this should not present a significant problem.

A launch present came on opening day for the Computerland shop in Birmingham. An order for ten ITT 2020 microcomputers was handed to manager Jim Attfield (left), by Bert Glover (centre) and Neil Unly of Farmplan, which sells computer systems to the agricultural industry.

Two added to chain

RAPIDLY expanding its coverage of the country with high street computer stores, the Computerland chain, formerly known in this country as Byte Shops, have added two more stores to serve provincial centres.

The latest additions are in Birmingham and Manchester, and the chain is currently planning to open another, in Glasgow, later this month.

Birmingham was the first to open, and immediately received an order for ten ITT 2020 computers from Farmplan, a group of farm companies specialising in buildings and computer systems for the agricultural industry. The shop is being managed by Jim Attfield.

As with the Birmingham shop the latest endeavour in Manchester will be handling systems from ITT, Plessey, Ohio Scientific, Cromemco, North Star Horizon, Vectro Graphics, Nascom and Commodore. It will also offer a range of peripheral products, packaged software and books. The manager is ex-computer consultant, Peter King.

The Birmingham shop can be found at 94-96 Hurst Street, while the Manchester operation is at 11 Gateway House, Piccadilly.

We can give you 1900 machine time in next to no time.

IF YOU NEED extra 1900 machine time in a hurry, call us — Tesco Management Services. As computer consultants we are able to arrange computer time on our own 1900 computers with the minimum of delay, whether your requirement is for overload or regular facilities.

We operate a 24 hour service, 7 days a week, and can offer you plenty of capacity on our 3 1904S computers. Peripherals include EDS 60 disc drives, tape decks, card readers, paper tape readers, and printers.

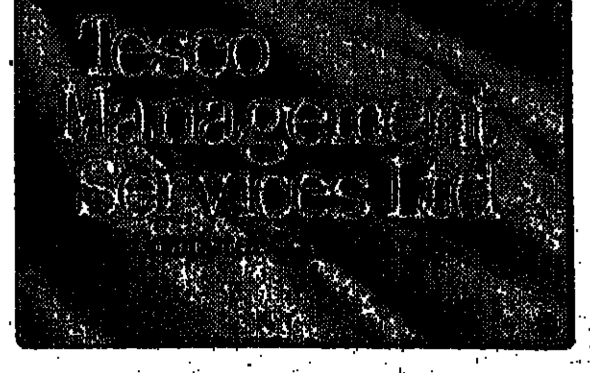
Tesco Management Services are here to be as accommodating as possible to your needs. We welcome clients sending their own operators. And recently, for example, we were able to give a local company 6 hours dedicated machine time during prime shift just 2 hours after they first called us.

By using us most clients find they are able to cut their computer bureau costs, and of course your work will be carried out with complete confidentiality.

If you want a fast and efficient service, ring . . .

Lynn Bonner on Waltham Cross 32222 Ext. 3559

Tesco Management Services Ltd., New Tesco House, Delamare Road, Cheshunt, Hertfordshire EN8 9SL.



Do you need help to design and program your MicroSystems?

Through its MicroSkill Register of over 200 professionals, Digitus provides contract engineers, designers and programmers to develop systems on most micros including:

● Z80/8080 ● 6502 ● 6800 ● LSI 11 ● MicroNova

Some of the Register people have their own machines. Others work on customer or Digitus equipment.

Whether you require a small program written or a large system designed and engineered, Digitus MicroSkill can provide support.

Call, write or visit: Digitus Ltd, Dumbarton House, 68 Oxford Street, London W1. Tel: 01-946 5916.

Digitus

PS *Make an appointment to visit the permanent Micro Hardware and Software Exhibition at our London Micro Technology Centre.*

There is no such thing as the future, there are only future options. Successive generations decide which options to take up, either by considered choice and directed effort or by default.

One literary mode which seeks to expand the human imagination and give substance to the vague possibilities of tomorrow is science fiction, and a recent Univac conference in the South of France (CW, August 2) posed the problem "What is the relationship of science fiction to reality?" ROBIN WEBSTER reports from Nice that instead of one solution, the conference produced answers as varied as the occupations of the speakers.

Views differ on the role of SF

THE fashionable analysis is that futuristic fiction evolved from the technological revolution; the most memorable predictions made by writers tending to be of a technological nature (robots, computers, the atomic bomb, and space travel). But historically, science fiction has taken the pulse of change long before scientists even realised change had a shape.

As Professor Ian Clarke, of the English studies department of Strathclyde University, suggested, science fiction is part of a deep social process: "It was born out of Darwinism with technology as a midwife," he said. "Its major implications are therefore social, and it is a valuable literary method through which society may examine and continually reassess itself."

One speaker felt that such a reassessment was needed immediately. Concerned that most people are dazzled by what he calls "technological glitter," Heinz Wolff, head of bio-engineering at the Clinical Research Centre, warned that society might be in a trance of self-deception.

"The impact of technology has been grossly exaggerated," he said. "What are we seeing at present is only a veneer."

Wolff's role during the conference was one of Devil's Advocate, and he exemplified his part well by titling his talk, "The future is farther than you think."

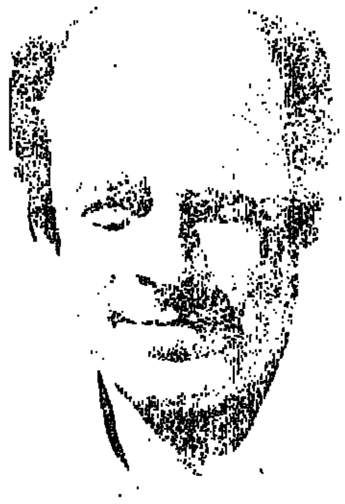
"Technology is the antithesis of skill," he said. "For the last 5,000 years technology has been working towards the abolition of physical labour, but we have discovered that this is bad for our health. What we must now ask is if the new technology will eliminate thought in the same way.

"Already it could be said that we are regressing to a food gathering, pre-civilised, pre-settled existence because we are losing our self reliance; we need energy for our homes and petrol for our cars, and we have to keep going further to get them."

Perhaps more disturbing, suggested Wolff, was the fact that technology had an anti-egalitarian and undemocratising influence.

"In an agrarian society it was easy to get a job, but now we are working towards a smaller number of people having a higher level of skill," he said.

This small group, the creators and manipulators, he saw as a "nouveau riche" in terms of technology. Society had to delegate more and more decision-making powers; and yet that very type of delegation was becoming increasingly unpopular.



Heinz Wolff Concerned about the effects of "technological glitter" on society.

One possible alternative, he said, was life-long education for every individual.

Wolff did not denigrate the idea of the "replete" society, a world where anybody could have anything and everyone excelled at something. But "technology is not helping us move towards that type of situation," he said. "It has not met the challenge of how we should reappropriate our resources. Nor has it helped us to become more aware of its own dangers," or what he called the risk calculation capability.

"If nuclear radiation were blue, it would be more manageable," he said.

Wolff also criticised the present tendency to centralise all our distribution systems, be it energy, information or food, as that exposed the major part of society to attack by the "dissident minority" (those judged to be working against the aims of society in general, ie: criminal).

"With centralised systems there will be immense capabilities for dissident members of society to cause disruption," said Wolff. "I believe we should be thinking about the advantages of decentralising, but in an ordered way."

The additional cost of doing that would, in the long run, be less than that of dealing with a dissident minority on a perpetual basis, he explained.

Disagreeing with everything Wolff said, the science fiction writer Harry Harrison stated that he believed technology was enhancing our skills.

And keeping on a tough note, Harrison went on to say that science fiction writers did not predict the future by means of some divine inspiration, but instead "shotgunned" the future.

"Most of the shots fail, but you remember the ones that hit," he said. "Science fiction knows the future exists, like science, and it admits to change, but it also knows that you can change change."

It should be remembered that the main purpose of the Univac conference was to elicit a multitude of ideas about how much of a bridge there was between science fiction and reality.

But as Alfred van Vogt, another science fiction writer, said, if only one answer were required it would be sufficient to remember that Arthur C. Clarke was knighted in the late 1960s for first postulating the concept of placing communications satellites in synchronous orbit around the earth.

'Fixed media drives will dominate sales in 1982'

FIXED media drives will account for 66% of world disc drive sales, by value, in 1982 compared with less than 42% in 1978. This is one of the main predictions in a report* on the market for rigid disc drives published by the California consultant James Porter.

The report predicts that sales of fixed media drives in the 30 to 200 Megabyte range will grow at an average rate of more than 64% between 1980 and 1982. Fixed media drives below 30 Megabytes will see a 26% a year increase in sales.

Sales of cartridge disc drives with capacities over 12 Megabytes are expected to grow at more than 47% a year, but another category of drive with removable media — storage module drives in the 30 to 80 Megabyte range — are expected to have an average annual sales growth of less than 19% up to 1982.

*1979 Disc trend report on rigid disc drives, by James Porter, \$550, Disk/Trend Report, 1224 Arbor Court, Mountain View, California, 94040, USA. Tel: (0101-415) 961 6209.

Packages for information storage

A TWO-DAY conference on software packages for information storage and retrieval is to be held in London in November. In addition to formal papers, it will include presentations from package suppliers.

More information on the conference, scheduled for November 12/13 at the Royal Society premises in Carlton House Terrace, is available from Jennifer Edkins, Institute of Mining and Metallurgy, 44 Portland Place, London W1 (tel: 580-3802).

How to stop having to explain why the computer won't do everything the boss expects

Every DP man has had the experience of explaining to management the limitations of his system. With any system based on applications, limitations are inherent – and removing them discouragingly expensive.

Dataskil's IDMS removes the need for those embarrassing explanations. It enables your system to carry out what the MD demands – *cheaply*. You can add whole new files without rewriting programs, bring new departments on line without rearranging all the data. Integration of systems need not be brought to a halt by expense when only three or four applications have been linked in; and you can integrate with TP systems too.

And, incidentally, run times can be significantly reduced.

All this makes for a much happier working environment for your staff. But from management's point of view the important thing is the saving of money. IDMS (Integrated Database Management System) has typically saved 30% of both development and maintenance costs in the field.

IDMS is obviously particularly suited to businesses in which a number of different user departments need to look at the same sets of facts from different points of view: good examples include construction, banking and insurance, and production and stock control in general manufacturing. It is simple to use – the language is a high level one based on COBOL. And it conforms to the CODASYL standard.

Satisfied users include British Aerospace, Tootal, George Wimpey and Short Brothers.

Ring Brian Nunn, or the Marketing Department, on Reading (0734) 581268 for an exploratory talk. Or write to him at ICL Dataskil, Reading Bridge House, Reading, Berkshire, RG1 8PN.

ICL Dataskil
The Computer Professionals

PEOPLE AND EVENTS

By Judith Morris

MORE than eight RTZ companies took part in an "It's a Knockout" competition in Bristol, where teams tackled nine arduous games. The TRZ Computer Services team of operators, analysts and group leaders, pictured here, managed to win second place in spite of the fact that they have only practised once. They lost to CSL of Bristol by only three points.

UK telephone gear firm established

A TELEPHONE equipment division has been launched by Landis and Gyr in the UK. Heading the new venture is **Peter Arnold**, who will be based at the Landis and Gyr headquarters in North Acton.

The apparatus to be dealt with by the new division includes coin operated telephones, call charge printers, call counters for telephone exchanges and equipment for processing and storing data relating to telephone calls.

Bob McPherson, formerly North European manager for the computer special systems department of Digital Equipment, has now become Southern region general manager for Systime.

David Evans has been appointed to join BIS Applied Systems DP management consulting team. Prior to this, Evans worked for the Ministry of Defence, and has been involved in a wide variety of projects using minicomputers and word processing equipment.

Robert Hall has been named as the marketing representative for Cincom Systems UK. He has been with the company for four years and has worked as a systems engineer and an analyst in the company's custom systems and consulting division.

Mike Rogers has been appointed European customer services manager for Modcomp, based at the company's European headquarters in Wokingham. Rogers has worked for Honeywell Information Systems for the past 15 years, rising from systems engineer to Northern regional director of customer services in Manchester.

Information on Prestel

FOR those still in the dark about the possible effects of Prestel, the Post Office's computer information service, which will be operating a public service this autumn, Eastern Counties Newspapers and Norwich Union, in association with Granada TV Rental is arranging a one-day seminar in Norwich on September 19.

For further information ring Roy Towler of ECN on 0603 28311.

Stephen Gaal has become director of software development for Data General, where he will report directly to president Edson de Castro. Formerly manager of systems engineering, Gaal will now be responsible for Data General's systems software development, including the Research and Development centre for advanced development in North Carolina. Before joining the company as an applications engineer, he worked for IBM and Bell Telephone laboratories.

Top men at new Harris division

FOLLOWING the formation of the Harris Information Systems international division, **Richard Holden** has been appointed general manager of the data communications and computer systems divisions of Harris Systems in the UK. He will report directly to the newly appointed vice-president and general manager of the division, **M. Andrew Haladej.**

Holden will be supported in his new role by **Andy Surtees**, UK sales manager for the 8000 and 1600 terminal systems; and **Clive Boon**, sales manager for the 100, 500 and 800 ranges. **David Hyams** is to head a team of 60 engineers with responsibility for both product ranges.

Chris Facey, who has spent three years in Iran working on computer applications, has joined the Southern division of Safe Computing as a project manager. A former programmer with CBS Records, **Lyn Redlean** has become a computer programmer in the same area. Another new programmer for Safe is **Lindsay Bradfield**, who formerly spent four years with the Meteorological Office.

Mike Abrahams has been chosen to head the quality control area for hardware product development at Mohawk Data Sciences' advance development laboratories in Los Gatos, California. Abrahams, who is manager of the customer engineering division for Mohawk in South Africa, will be leaving for the US next month. In his new position he will be responsible for the quality assurance of new products, and will act as a link between Los Gatos and Herkimer, the corporation's manufacturing plant in New York. Prior to joining MDS Abrahams spent two years with Control Data.

Terry Harvey has formed his own recruitment consultancy, following the break-up of Data 100's European development group earlier this year, where Harvey was general manager. He intends to offer a personal service to companies with the experience gained at Data 100 and Honeywell.

Ian Jarvie has become a member of Computer Machinery Company's technical support team based in Newcastle. He will be responsible for pre and post sales support to CMC users throughout Tyne and Wear and Northumberland. He was formerly a system analyst with the Newcastle and Gateshead water company.

Barrett

Vaughan-Williams

Bob Barrett has joined Microsystem Services as product engineer, directly responsible to the managing director, Jim Knott, for the technical aspects of customer service. Bob was previously employed by Perkin-Elmer where he designed control systems for three years, and was a marketing specialist for a further two.

Reinalt Vaughan-Williams, formerly a senior consultant with CMG UK, has been appointed an associate director of the company. He takes up his position with the UK Package and Technical Support group, which is responsible for all of CMG's UK packages and data communications.

OBITUARY

John Mills

JOHN MILLS, who was UK marketing manager for Documation, has died suddenly. Mr Mills, 38, had only recently joined Documation, having previously worked in the sales and marketing divisions of several computer companies, including Memorex. He lived in Hartley, Kent.

Soccer results

Division 3
ICL 3, CJB 0
Sherwood 6, ICL 1
Computer Weekly 9, UCSL 1.

Division 4
Forust 7, Allen 0 (correction).

Division 5
British Aerospace 3, NCR 1

DIARY

AUGUST 19-22
Third Rocky Mountain Symposium on microcomputers. IEI Computer Society, Pingree Park, Colorado. Contact Michael Tindall, Dept of Computer Science, Colorado State University, Fort Collins, CO 80523.

SEPTEMBER 3
Forum on use of meteorology. BCS Fortran specialist group, BCS, 13 Mansfield Street, London W1. 11.00.

SEPTEMBER 4-7
Compcon Fall '79. IEEE Computer Society, Capital Hilton Hotel, Washington DC. Contact Compcon Fall '79, PO Box 639, Silver Spring, MD 20901.

SEPTEMBER 6
The future of real time languages in process control. BCS Process Control specialist group Reading University, Reading. 10.00.

SEPTEMBER 10
Database systems and information retrieval. BCS Information Retrieval group. Computer Laboratory, Cambridge University, Cambridge.

SEPTEMBER 11
Performance management. IDPM West London and Oxford branch. Tesdata House, Hatfield Road, Slough. 18.30.

Bar-coding techniques in stock control. IDPM, Hull Crest Hotel, Ferriby High Road, North Ferriby, Hull. 10.15.

SEPTEMBER 12-14
Shape recognition and artificial intelligence. AFTEC and IRIA. Toulouse, France.

SEPTEMBER 13
Optimal control of large scale systems. IEE. Savoy Place, London WC2. 09.45.

SEPTEMBER 17
An afternoon with James Martin. IBM CUA and Butler Cox Associates. The Grosvenor House Hotel, Park Lane, London.

SEPTEMBER 17-21
Computer science and law. Course. CREST and SRC. Swansea University, Swansea. Tel: 0792 25678 ext 502.

SEPTEMBER 25
Aspects of a computer controlled digital telephone exchange — the Plessey PDX. IEETE. Granville College, Sheffield. 19.00.

SEPTEMBER 26
Introduction to microprocessors. IEETE. Leisure Centre, Stevenage. 19.30.

Computer File

by Dik

COMPUTER COURSES

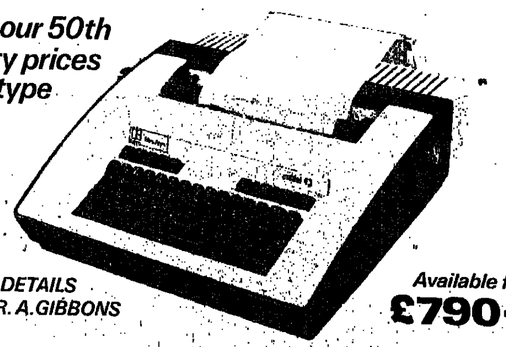
from The Oxford Business School for British Computer Society Associateship Examination and for Management Briefing. This new series of courses combines the convenience of being able to study at home with the benefits of a personal tutor available by telephone plus optional residential form. For detailed leaflet and application form write to The Director, Dept ZA3, Oxford Business School, Banbury Road, Oxford OX2 6ES or telephone 0865 54281 (24 hrs.)

Westrex Litton

Teletype Model 43 KSRs IMMEDIATE DELIVERY!

Westrex Litton

Check out our 50th Anniversary prices on the Teletype 43 Range



FOR FURTHER DETAILS TELEPHONE MR. A. GIBBONS

Available from

£790·00

Westrex Company Limited, 152 Coles Green Road, London NW2 7HE. Tel: 01-452 5401

The traditional idyllic picture of life on the farm has, of course, little resemblance to reality. The place of the micro in agriculture may seem as unlikely a juxtaposition of concepts, but in fact, as NICHOLAS ENTICKNAP reports, life on the farm is coming more and more to depend on sophisticated concepts of accounting analysis and process control possibilities. Increasingly, these developments are making use of the micro.

Running a farm with a micro

Analysing fodder/milk yield ratios with the help of a computer (ironically a Bull-GE system). Today a micro could do the same job.

WHEN my editor first asked me to write about micros on the farm, I was struck by the incongruity of the theme. Your typical idyllic pastoral scene, with cows grazing peacefully in the sunshine and wheat oscillating lazily in the breeze, seems to belong to a different world from the dynamic, thrusting, fiercely competitive technological revolution that has produced the microprocessor.

But of course, today it is a case of chips with everything. And it is not really so surprising that farmers should be taking a great interest in the potential of the micro. Farming in the UK has been extremely efficient ever since village economy subsistence farming developed into the more scientific activity we call agriculture.

The history book tells us that this transition dates back to the beginning of the 18th Century, when enclosures were abolished, crop rotation introduced, and fame came to men like Farmer Townsend and Coke of Holkham. The UK lead in farming practice has continued to this day, as we are being constantly reminded by those endless political arguments about the Common Agricultural Policy and the green pound.

As might be expected, the biggest interest is in the development of micro based data processing systems for the farmer. Farms are, after all, small businesses; their owners have to maintain accounts, make tax and VAT returns and make management decisions as in any other business. Until the advent of the micro, computers were too expensive for all but the biggest farms. Now there are probably 50,000 farms that can justify their own in-house system.

With such a large potential market, systems specially designed for farmers are becoming available in numbers. Sufficient numbers, in fact, to give the farmer a headache when he comes to choosing between them. Help is at hand, however; the Agricultural Development and Advisory Service (ADAS) of the Ministry of Agriculture is preparing a report evaluating the systems currently available. This is scheduled for publication in January.

Peter Russell, the ADAS executive responsible for hardware evaluation, says the objective of this report is "to give a dispassionate view of the micro systems available for farmers. It will not be a 'Which?' report, but will comment in fairly general terms on the minimum configuration needed to do a particular task. This is similar to the advice we already provide on farm machinery selection."

The farmer's DP requirements are not exactly the same as those of a small business. Russell's ADAS colleague Howard Westlake, who is responsible for software evaluation, explains. "Double entry systems are virtually non-existent among working farmers, and ledger is a word which is simply not used. Farm systems tend to be oriented towards cash analysis, at cash time and not at invoice time. This makes debtors and creditors difficult to identify, and so they are usually recorded separately."

There are good reasons for this. Farmers don't just need information about their overall financial position — they also need both accounting and management information about individual farm activities, such as the milk yield, or the harvest of a particular crop. Each of these activities is termed an enterprise.

From a management point of view, enterprises have the unfortunate characteristic that results follow the dictates of the seasons rather than the demands of conventional accounting periods. For example, a crop of wheat might have a period of a bit less than two years between the purchase of the seeds and the eventual harvest.

To summarise, farm data processing systems have three different tasks.

Firstly, they handle all financial recording, accounting and budgetary functions, in such a way as to provide the farmer with the information and documents he is used to as well as providing more conventional reports on a type that the farmer will hitherto have done without.

Secondly, the computer can facilitate control of individual enterprises by keeping detailed records of all relevant events and by producing management reports at regular intervals. Thirdly, it can do mundane calculational work such as payroll.

Peter Russell says that with this last category the benefits are not very tangible, and it would not be worth a farmer's while to acquire a micro for this sort of application alone. The other applications provide two kinds of benefits. First, they save time, worry, and possibly, though not usually, money. Secondly, they improve the information available to the farmer, by making it more detailed, more rapid, and available on demand.

One such system is the brainchild of a Hampshire farmer, Geoffrey Paterson. It was originally designed for use on a Hewlett-Packard minicomputer, but has been available also, since the Royal Show at the beginning of July, in scaled down form on a North Star Horizon micro. A company called Farmfax has been set up to market both systems.

The North Star system is priced at £4,950, for which the farmer gets a processor, a VDU, a printer and two floppy disc drives, plus software for one application. Other applications can be supplied at extra cost. The packages available include payroll, accounting, arable crop farming and dairy management.

Although the software was specifically written for the agricultural market, Farmfax director Simon Mian reports that it has attracted "a great deal of interest in other small businesses where particular enterprises are to be monitored closely. For example, in a business with two offices, one is able to monitor the performance of both offices either separately or together."

A second system, also developed on a farm rather than by a computer company, is marketed by Farmplan, and is based on the Apple micro. The system is similar in terms of the applications it can handle, but is marketed in a rather different way.

Farmers can purchase the system, comprising a 48K processor, twin floppies, VDU, and 80 column printer, plus all the software currently developed for it, for £4,645, plus an annual payment of £250. That sum is a sort of club membership fee, which entitles the farmer to any new software the company may develop, and a say in the choice of new development projects.

Although farm data processing is the subject of the most intense micro development activity, there is interest also in the process control possibilities, most notably the automation of the dairy parlour.

Of the several systems under development, a typical example is the AFMS/80 system, developed by Fullwood and Bland and currently being evaluated by ADAS at an experimental farm near Winchester.

This system not only measures the milk yield but also controls the dispensing of food and measures the body weight and temperature of each cow. The cows are identified by a signal transmitted from a transponder contained in a collar.

The computing power of the system is provided by four 64K Motorola 6800 micros, using floppy discs for data storage. As well as performing process control functions, the system can produce a variety of management reports, identifying for example cows whose milk yield is less than normal, or whose temperature is higher than normal.

Micros will almost certainly be used for other process control tasks in future. Possibilities already being considered include electronic potato sorting, control of grain dryers and glasshouse heating systems, not to mention various features on tractors.

At present the revolution is only just beginning. ADAS estimates that only about 100 micro based systems have been installed on farms so far, and most of them are hobby-type systems which have been bought by farmers to play with. But there seems little doubt, on the basis of the development activity taking place, that micros will make as big an impact on farming as on industry in general.

COMPUTER WEEKLY is holding its Annual Ball on Friday, October 12 at the Royal Lancaster

Computer Weekly is holding its fourth annual Ball. Last year nearly 700 people attended what has come to be regarded as the computer industry's big night out.

This year the Ball will again be held under the patronage of the British Computer Society. And proceeds will once more be devoted to a deserving cause associated with the computer industry.

So why not help us to help others? And at the same time enjoy a pleasant evening with friends and colleagues.

Order form — COMPUTER WEEKLY Annual Ball

Tickets are available at £17 for a single ticket. Included in the price is a dinner, cabaret and dancing until 2 a.m.

Please send me ..... single tickets at £17 per head (enter number required).

Please reserve ..... table(s) for me (10 places at £17 per head).

My cheque for £ .... is attached. (Cheques should be made payable to IPC Business Press)

Please send the tickets to me at the following address:

Name .....

Company .....

Address .....

.....

When completed this order form should be returned together with your cheque to Chris Hipwell, Publishing Director, Dorset House, Stamford Street, London SE1 9LU

The International Standards Organisation met in London earlier this year to consider standards for the interconnection of open systems. The rapid growth of networks and the increasing use of telecommunications by all sections of the community makes the early establishment of recognised international standards vitally important. Here FRANK TAYLOR, of Systems Technology Consultants and chairman of the British Standards Institution DPS/20 committee, who led the British delegation at the ISO discussions, reports on progress.

ISO progress on open systems interconnection

DURING the recent meeting in London of the International Standards Organisation committee responsible for open systems interconnection, some, although not all, of the issues described in my earlier article (CW, May 24), were carefully considered, and considerable progress was made.

The two main activities dealt with were refining the model for a universal open systems architecture, and planning future work for this committee, bearing in mind the activities of other interested and similar bodies.

First of all the seven-layer model previously developed by the committee was confirmed but sub-layering was considered as a way of developing it to meet needs which might emerge at a future date.

The changes and refinements included consideration of addressing requirements within the upper layers, ie addressing particular users or terminals rather than lines or modes; and multiplexing — where, when, and how this should occur.

Another refinement produced during the meeting was the division of open systems architecture into six primary components — these are data storage, integrity and security, data representation, program support, processing and allied resources, and data transfer.

A number of procedures involved in operating such a network architecture, were also considered. For example, the fact that communication between entities at the same conceptual level must necessarily appear via the next lower layer of the model.

The future work of this committee was carefully considered, and there was clear support for a proposal to seek authority to start standardisation work in the near future. This will involve changing the formal scope of the committee which will involve approval by its parent committee (TC97). It was generally felt that the time is now right to start standardisation work in line with the model which has been developed during the last two and a half years, in close co-operation with other ISO and allied committees with an interest in particular parts of the architecture. These include TC9/SC6 and the CCITT.

New working groups were established during the meeting to align with the likely work items, and proposed work items were also formulated. These will now be sent to the parent committee for issue for a postal ballot, and hopefully, if a request of the UK is actioned, will be subsequently discussed at the meeting in November. The proposed work items cover the preparation of standards in line with the architecture and the various layers of the model, and covering the following areas:

1. The Reference Model. Although the present reference model is highly developed technically, there is a clear need to co-ordinate activities of other ISO committees which are covering sections of the open systems area, and to liaise with other bodies developing standards, such as the CCITT. In addition, the existing working paper may be processed as an ISO standard; this is a matter which will be decided later.

Over the next few years it is expected that the architecture will evolve to cover new applications, and to cover other areas based on computer technology, such as the inter-linking of word processors and facsimile transmission.

2. The Physical Layer. Here the basic problem is one of checking the compatibility and consistency of existing work with the model.

3. The Data Link Layer. Similar comments to those above apply; existing standards such as HDLC (ISO 3309 and 4335) appear to be close to requirements.

4. The Network Layer. Here a little more work may be required, since the control of data flow is packet switched and circuit-switched systems differ; and other issues need to be resolved.

5. The Transport Layer. Little standardisation work has been clear in this area, concerned essentially with the end-to-end transfer of specific sets of data relating to specific jobs or tasks.

6. The Session Layer. This is an area where considerable forward thinking has been done by SC16 and its working groups, but there are no existing standards.

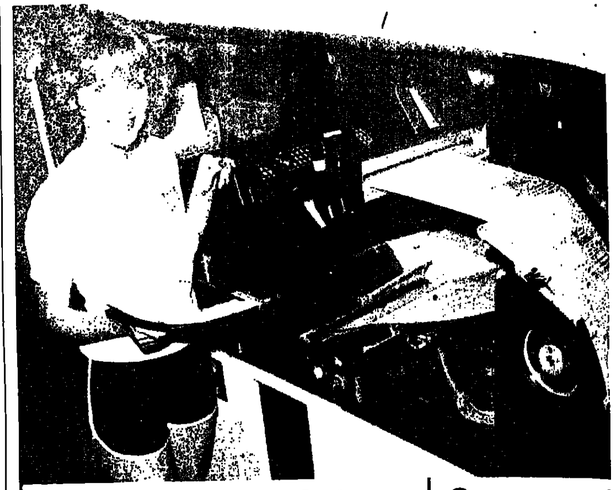
7, 8 and 9. Virtual Terminal Protocol, File Transfer Protocol, Job Transfer Protocols (three items). These bridge the upper two layers, and carefully structured standards, which satisfy users' needs and align with the model, will be needed. The term Job Transfer Protocols here refers to a universal version of RJE protocols excluding, at present, job control languages.

10. Management Protocols. This will need to include consideration of the type of liaison mentioned in the previous CW article and the management of transfers corresponding to such liaisons.

Some of these work items will involve comparison of existing standards such as X25 (which covers layers 2 and 3) with the requirements. Others, for example the session layer, will need to start from scratch in terms of developing standards. Certain protocols within the upper layer such as the VTP protocols may well build on Euronet work and other VTPs. The file transfer access and management protocols are very likely to build on UK work within the EPSS (now Post Office) Study Group.

All in all, this can generally be regarded as a successful meeting. Considerable progress was made towards getting work under way at the actual item level which will allow draft standards to be produced for comment and processing. The study phase which has formed the first major part of the committee's work can now be regarded as having passed through its first phase, and is substantially completed, although further refinement of the model will occur, including study of other important items such as vocabulary, formal description of protocols, and heading formats and principles.

It is to be hoped that this activity will continue in parallel with development of initial standards corresponding to those areas of the model which are fully defined, and on which standards can be based, and that authority to proceed will be forthcoming in November when TC97 meets in Madrid.



Firms offer laser printing

THIS month two firms in the North West have inaugurated bureau services based on the 20,000 lpm IBM 3800 laser printer. The firms are Imagen of Congleton, Cheshire, and LaserPrint, whose 3800 is seen here at the company's Manchester centre.

Apart from its speed, the advantages offered by the 3800 over conventional impact printers include the capabilities to mix type faces, to print bold characters, to superimpose graphical information like signatures and logos and to use A 4 sized plain paper, all of which make the 3800 suitable for printing personalised letters at a rate of 10,000 per hour.

LaserPrint was set up by continuous stationery supplier, Continuprint, and the mail order company, J. D. Williams. The host for the 3800 is J. D. Williams' IBM 370/148 which runs IBM software that anables it to handle print tapes from most types of mainframes and LaserPrint says that it is prepared to accept tapes from computer users all over the UK.

Distributed processing systems added to Texas' mini range

FOUR systems, aimed at the distributed processing market, have been added to Texas Instrument's DS990 range of mini- and microcomputers. Three of them are based on two new OEM products.

At the bottom end is the DS990 Model 1, a single-user desktop system based on Texas' TMS 9900 16-bit processor chip. With two floppy disc drives it costs £6,480.

The second low-end system is the Model 2, a multi-user system which sells at £9,055 including two VDUs and two floppy disc drives. It uses the 990/5 single board computer, a new OEM product which is also based on the 9900 chip and includes 64K bytes of RAM, two asynchronous ports and logic for multi-processor working.

The other two systems are at the top end of the range, the DS990 Models 20 and 30, and are based on the other new OEM product, the 990/12. This uses Texas' 74S481 four-bit bit-slice to achieve up to three times the performance of the 990/10 processor used in earlier models.

An optional cache buffer for main memory priced at £2,300 can cut access time by nearly half if programs are structured to take advantage of it. Basic OEM price for the 990/12 ordered in batches of 25 is £13,640 each. This includes a processor with 256K bytes of error correcting RAM.

Models 20 and 30 are packaged systems which start at £44,230 and £56,175 respectively. Model 20 comes with two VDUs and disc and tape backup storage, and can support up to 20 terminals.

The Model 30 can be configured with up to four 200-Megabyte disc drives, instead of the 50-Megabyte drives available on the Model 20.

Both systems use the existing DX10 disc operating system, for which several new software packages have been released. Emulation of the IBM 2780/3780 remote batch protocol is supplemented by 3270 Interactive Communications Software, and Query-990 is offered as an enhancement to the DBMS-990 database management system. These cost £1,500 and £1,115 respectively.

A new operating system, the TX5, for the low-end DS990 systems up to Model 8, has also been introduced.

Government slated over industrial control

A STRONGLY worded criticism of the UK's industrial control industry has come in a report published by consultants Larsen Sweeney.

Part of a series of summary reports on the UK electronics industry, it directs its criticism towards the "apparent gap between the UK government's ambition to revitalise the UK manufacturing base and the industrial control industry's ability to do the job."

The report suggests that "is perhaps a sobering thought that much of the equipment needed to realise such an ambition will be imported, rather than produced here.

It is also critical of the government's negative attitude towards financial encouragement of new product development. The UK is now the only major Western government not actively encouraging such development, the report suggests, and in consequence a rapid decline in the manufacturing base for industrial control equipment is predicted.

Though the UK market for industrial control system is estimated to be rising at a compound rate of 8% per year, up to the 1985 time-frame of the report, Larsen Sweeney predicts that the industry's balance of payments deficit will grow by up to 31% a year.

DEC likely to top $2 billion

RESULTS for Digital Equipment's last fiscal year, which ended on June 30, show that the company continued to grow at an impressive rate, especially in Europe, where turnover increased by 29% to $466 million.

Worldwide sales grew by 20% to $1,804 million, indicating that DEC's turnover in its current fiscal year should be well over the $2 billion mark — only three years after passing $1 billion.

DEC now employs 14,400 people worldwide, 1,700 of them in the British Isles.

Cincom in North

CINCOM, best known for its database management system Total, has opened a new office in Manchester, Responsible for the Midlands, the North and Scotland, its address is 12 Mosley St, Manchester. Tel: 061-228 2811.

Hatfield centre provides WP advice and research

THE National Reprographic Centre for documentation at Hatfield Polytechnic is starting an advice and research service for word processing to complement its established services in micrographics. To start the work the British Library has funded the purchase of a three-station Wang 25/2 word processor, which will be used both for experimentation and for producing publications.

Directing the WP work will be Derek Painter, who has recently joined NRCd from Rotaprint, where he directed the development from scratch of the Texxetta screen-based word processor. He and his staff will be providing advice on choosing and using word processors along the same lines as the Centre's service on microfilm and associated equipment, which has been in operation since 1967. Booklets and courses will be produced, and a course for managers on basic familiarisation with WP will be the first offering, in October, to be repeated three times a term.

Several research projects are on the cards. One is the electronic journal planned to run on the Poly's PDP-10 (CW, August 2). In addition to the usual means of distribution of the journal's information by dial-up terminals, it may become desirable to output on to WP systems or phototypesetting. Also, the Centre's own journal will be produced on the Wang, and retrieval software could be produced for this, in addition to distribution methods such as floppy discs and COM.

Painter also aims to explore the interface between the PDP-10 mainframe and the Wang, as part of the broad trend of convergence of DP, WP, and communications. A hardware link would enable him to study the use of a word processor as an intelligent terminal to a mainframe, and would also provide a tie-in to microfilm by making it easy to send WP text to COM. "Examining possibilities" is, he says, the basic idea.

The research will receive money from the British Library, but the Centre aims to make a profit from the sale of its services.

Asked about the Centre's prospects for competing against the enormous number of WP conferences that are being run at present, Painter commented, "I think the Meetings Industry balloon may burst very soon."

Exploring the use of WP as an administrative tool will be another of Painter's tasks, but he sees his most important job as dealing with the social aspects of new technology — finding out what jobs there will be and getting the ball rolling on training "a whole new generation of office workers to cope with the new gear."

DATA SYSTEMS NEWS ISSUE NO 8

Power for the 80's!

In the computing environment of the 1980s, more and more users will demand independent, decentralised facilities and real-time data processing will become increasingly necessary for commercial as well as for scientific applications

This shift towards real-time, distributed systems is already accelerating the erosion of the 'mainframe/minicomputer' distinctions; a new breed of Superminis, with mainframe-style architecture and powerful, real-time operating systems, is moving to the centre of the stage.

PERKIN-ELMER SETS THE PACE

Perkin-Elmer anticipated this development as long ago as 1974, with the introduction of the world's first mainframe-style, 32-Bit mini. Since then, the Company has continued to set the pace, with the first mini to directly address 1Mb of memory, the first mini with 16 general purpose registers and the first mini with writable control store.

EXPERIENCE THE KEY

Today, Perkin-Elmer 32-bit Supermini systems have established market leadership worldwide. The unrivalled range of mature 32-bit software products, proven where it counts — in the field — represents a massive 500 man-years of development.

When it comes to real-time data processing, there is simply no substitute for experience.

Team Power

Perkin-Elmer Computer Systems Division is committed to providing the customer with the full range of services and the level of support which he is entitled to expect from a major computer manufacturer.

COMPREHENSIVE SERVICES

An experienced sales team is backed at all stages by a comprehensive support structure, which includes systems analysts, technical support and software services. An important component is the Slough-based Corporate Commercial Software Group, which develops standard commercial software products for worldwide distribution.

USER SUPPORT

After-sales support is fully assured by a carefully selected and trained Field Service organisation and users are further supported by a professionally staffed Training Centre and by Interchange, an active and diverse User Group.

Perkin-Elmer is, in sum, fully geared to deliver and support the most powerful and cost-effective minicomputer systems in the industry.

32-Bit Power

The recently launched Perkin-Elmer second generation Supermini, the Model 3220, significantly outperforms other minicomputers in its price range.

The Model 3220 will directly address up to 4Mb of MOS memory in 256Kb modules. There are eight sets of 16 registers, for a total of 128, each 32 bits wide with four levels of external interrupts.

ACCURACY AND SPEED

Performed on a full 32-bit word, error correction is standard on the Model 3220. Using seven additional bits for each word in memory, all single bit errors are corrected and all double and most multiple bit errors are detected.

A Loader Storage Unit with watchdog timer is also standard. The LSU loads the automatic boot load program in the memory, which then loads the operating system from magnetic tape or disc.

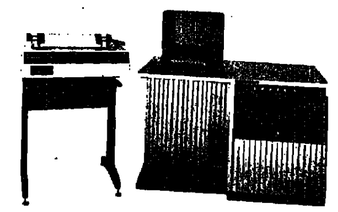
Implemented in 2Kb of PROM, the boot load program also contains the self test which checks out memory and certain processor functions before loading the operating system.

The Perkin-Elmer Model 3220 uses 1Kb of optional bipolar cache memory. With a hit ratio of 80%, a memory access time of 340ns is achieved. All high speed devices, such as mag tapes and discs are connected to an Extended Direct Memory Access (EDMA) bus, which gives a throughput of 8Mb per sec.

The Model 3220 supports up to 3023 devices with four user selectable priority interrupt levels.

EXTRA PERFORMANCE

The optional Floating Point Processor has 46 floating point instructions available for use. Also provided as an option are 2K words of Writable Control Store (WCS), which can be used to implement special mathematical or scientific algorithms, FORTRAN or COBOL RTL routines or any special functions in microcode. A complete set of WCS development software is also included.



16-Bit Power

The new Perkin-Elmer Series Sixteen, launched early this year, is a family of packaged 16-bit systems which are designed with OEM's and system houses, as well as end users, in mind. Designed to encompass a wide range of configurations, from entry-level to large-memory systems, Series Sixteen offers the latest technology and a level of computing power significantly greater than that of comparably priced products.

System 1615, priced at only £7,730 and aimed at distributed processing or small stand-alone applications, includes a Series Sixteen processor with 32KB of 900ns MOS memory expandable to 64KB, video display unit, page printer, memory processor integrity test and 512KB of floppy storage.

System 1624, priced at £12,220, offers a processor with 64KB of MOS memory expandable to 256KB and a CP120 matrix printer, as well as all the other 1615 features.

System 1625, at £16,740, is aimed at multiterminal system applications and has 10MB of disc storage. An optional floating point processor is available.

System 1635, top of the range at £20,360, offers maximum performance and data integrity. The processor has 128KB of 750ns MOS memory with ECC, 10MB of disc, floppy disc interface and matrix printer.

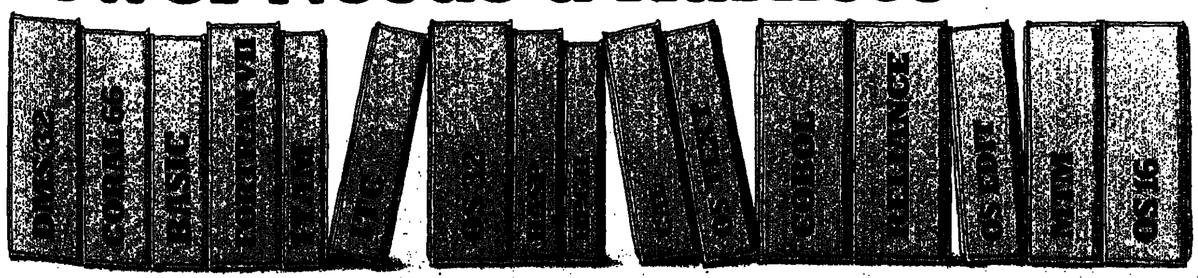
An enhanced operating system and a full suite of languages have been provided for the Series Sixteen family, as well as a full range of high-level data communications products to allow communications with large mainframe hosts.

Prices

Series Sixteen from £7,700

Model 3220 from £23,120

Power Needs a Harness



Minicomputers are now challenging mainframes for sheer performance. But computing power is of little use unless it can be easily applied to the problem in hand.

With Perkin-Elmer 16 and 32-bit software, you can *really* harness a price/performance combination that is unbeatable.

The extensive list of mature, field-proven software products includes the outstanding OS/16 and OS/32 real-time, multi-tasking operating systems, COBOL, FORTRAN, BASIC, MTM for multi-terminal program development, ITAM for data communications and a HASP emulator.

For Commercial Applications, there's the newly released RELIANCE, a complete software system for implementing transaction processing on Perkin-Elmer 32-bit Superminis, comprising an Integrated Transaction Controller, a Data Management System and COBOL.

RELIANCE ensures fast, easy and cost-effective programme development. Exceptionally high performance and reliability, combined with automatic system integrity, frees programmers to concentrate on application solutions.

For Scientific Applications, the superfast FORTRAN VII, designed to ANSI FORTRAN 77 standards, is globally optimising and offers comprehensive error analysis, a run-time library and a floating-point option.

To: Jane Berry, Perkin-Elmer Computer Systems Division, 227 Bath Road, Slough, Berks.
Please let me have full information on

Model 3220 ☐ Series Sixteen ☐ RELIANCE ☐ FORTRAN VII ☐

other products (specify) .....

Name .....

Position .....

Company .....

Address .....

Tel. No. .....

For further information contact • Jane Berry Slough (0753) 34511 • Tim Marlton Manchester (061) 928 8713

OP SPOT

Using the Mount and Unload commands under IBM OS

By Bernard Allen

THE IBM OS operator uses the Mount command to allocate disc and tape units to the appropriate media. He has the option of specifying the device type or an individual unit.

For example, to mount volume 123456 on unit 130, he places the disc on the drive and enters the following Mount command:

M 130, VOL = (SL, 123456), USE = PRIVATE

When this has been processed by the system, the volume is available for use by certain jobs.

The Mount command gives volume 123456 a mount attribute of Reserve and a use attribute of Private.

Reserve means that the volume cannot be unloaded by the system until the operator commands it to do so.

Private means that in order to read from or write to the files, or datasets, that are on it, the user must specify both the file name and the volume serial number.

Other use attributes are as follows:

Public. The user has to specify the volume serial number but not the file name. When mounting the volume, the operator adds

USE = PUBLIC

to the end of the command.

Storage. This enables the user to store both temporary (that is, files which exist only while his job is running) and non-temporary files. The operator adds USE = STORAGE to the end of the Mount command.

The other Mount attributes are as follows:

Resident. The system cannot unload the volume under any circumstances. This applies, for example, to the system pack, or SYSRES as it is called.

Remove. Such volumes can be unloaded at any time, except when they are being used by jobs in the system.

The Mount command can also be used to change the Use attributes of permanently resident or reserved volumes. For example, to alter volume 123456 on unit 130 from Private to Public, the operator enters:

M 130,Use = Public

To unload the disc, the operator uses the Unload command, as follows:

U 130

The Unload command prepares the volume for demounting by the system. The unload is effected by the Initiator/Terminator as it goes through the resource allocation process involved in starting a job.

To speed up matters, the operator starts a dummy job, or procedure, which fails because it doesn't actually exist on the procedure library, SYS1.PROCLIB, but still goes through the process needed to unload the volume. He enters:

S D

'Don't let individuals negotiate'

THE final chapter in the John O'Reilly union saga has been written by H. Moore, DP staff representative with APEX

"Any worthwhile union-negotiated salary structure will allow for recognition of individual merit.

"But to allow individuals to negotiate for themselves is unfair and, for some, difficult — one can be a good operator but inarticulate when face to face with management.

"Such a situation lends to aggravation within the installation and results in staff going off on the merry-go-round.

"I must also object to his insinuation that trade unions constitute a recipe for unrest in our industry. I would not be surprised to learn that his junior operators are asking by how much his salary is greater than theirs."

Salary-based allowance is unfair and illogical

DO sites with very powerful machines and heavy workloads pay higher shift allowances than those with smaller machines and lighter workloads?

This question is put by an operator who, by his account, is unhappy with his lot and would like to know if his site is treating its staff fairly.

His site has two IBM 3032s with "all the associated peripherals" and a large TP network. He works a five-day, three-shift pattern, and gets an allowance of "less than 20 per cent of basic salary."

I, for one, don't know of any sites where the shift allowance is related to the type of machine or weight of workload. And that is how it should be.

The shift allowance, in theory, compensates staff for the inconvenience incurred by working their particular site's shift pattern. (Although, as far as I am concerned, it in no way makes up for the disruptive effect shift work has on the social and family life of operations staff.)

It is quite common for the shift allowance to be calculated as a percentage of basic salary. Thus, at a site where a two-shift pattern is worked, the operators will probably get something between 12 and 15 per cent.

Similarly, a site which employs a three-shift rota will probably pay the operators something in the region of 20 per cent — the same as our friend gets, in fact.

Personally, I don't like the percentage method of calculating the allowance. I think it is both unfair and illogical. It means that the shift leader gets more than the senior operator, who in turn gets more than the operator, and so on down the line.

Regardless of rank, they all experience the inconvenience and, in the case of the three-shift system, all have to adjust their sleeping habits.

I prefer the sort of scheme under which the operators receive a fixed allowance, separate from the basic salary.

Such a system is employed at Univac's West London bench mark centre. As an aid to career progression, if because of promotion a Univac operator is to move off shifts, he will do so at the time of his annual review. This enables the management to award him a rise big enough to compensate for the loss of shift allowance.

As for relating workload to pay, I know of just one site where this is practised. It is done on a competition-type basis — the shift which achieves the highest throughput for each month is taken out for a night on the town, all expenses paid by the operations manager.

The idea of a manager taking the operators out seems fair enough. But if done on an individual shift basis, it might lead to dissatisfaction.

A better scheme would be to work out a productivity figure and pay the operators a bonus based on that. (If they want the money to be kept for a night out on the town, fair enough.)

Such a system, as it is based on the throughput achieved would encourage the operators to help minimise system errors and downtime.

The idea of the type of machine being related to basic wage, not shift allowance, was one of the reasons behind the GEC operators' dispute (see Spot, March 9, 1978).

The operators at GEC Stoke, Coventry, wanted rises to reflect the increased technical awareness needed to run their system, which has been upgraded both in terms of size and sophistication. They were unsuccessful, even after a long-drawn-out dispute.

Anyway, as I see it, the basic wage should be in line with the role played by the operator. Technical expertise should be properly rewarded.

I appreciate that it is difficult but sites really should make an effort in this regard. If it means re-writing job descriptions, so be it.

Two are disillusioned

THE action taken last month by operators at the West Midland Health Authority (CW, July 12) was successful in speeding up their pay rise, but also led to two of them becoming disillusioned with unions.

Operator Mick Hobday and shift leader Dave Mills became so disillusioned, in fact, they resigned from the National Union of Public Employees.

They did so after a local branch meeting had voted to accept new terms and end their protest action, which had involved holding up special back-pay runs for WMHA employees who had already received their rises.

Hobday told me, "We wanted to hold back the jobs until the following week, to save having to work late on the Friday evening.

"But most of the programmers and data control staff voted to run the work straight away, regardless of the inconvenience to the operators."

According to Hobday, the Health Authority's Birmingham site has three shift teams, but only two of them will take part in any union activity.

"From now on our shift won't have anything to do with the union. Out of the four in our shift, just one is in the union — and he's a trainee," he said.

Competing for shift title

GEOFF of Hoskyns Systems in Sheffield, writes:

"We would like to put your readers right on one point — the original super-shift (spelt supa shift) is that of our site, and comprises Andy, Kev and myself.

"We operate an ICL 1903A, and, like the bogus super-shift you mentioned the other week, we also get through more work than any other team at the site.

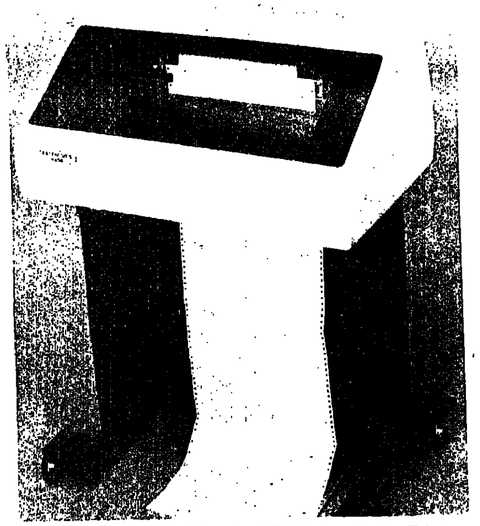
"When systems and programming staff have queries we are only too happy to help them out, and we remain cool and calm through all crises.

"Please say hello to John Lee, Mick Ryan and Alan Brekkan who are all up-and-coming operators trying to reach the standard of super-shift. Etc. etc.

Say no more."

UKS has Centronics 6000 Series Line Printers EX-STOCK

Available immediately from Cable & Wireless UK Services Ltd.



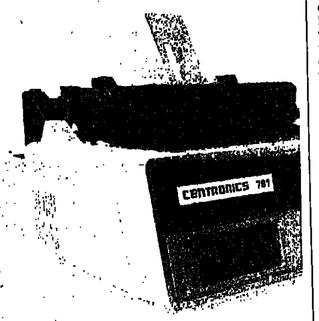
Models 6150, 6300 + 6600, configured to the standard Centronics parallel input specification, with the following options:—

- ☐ Bottom form feed.
- ☐ UK64 ASCII print band.
- ☐ 12 channel direct access VFU.
- ☐ 132 Column printing.
- ☐ Paper jam sensor.
- ☐ Audio alarm.
- ☐ Casters.

Complete Unit Prices

- Model 6150* (150 LPM) **£3425**
- Model 6300 (300 LPM) **£4177**
- Model 6600 (600 LPM) **£5579**

(*No audio alarm or paper jam sensor and is rear fed)



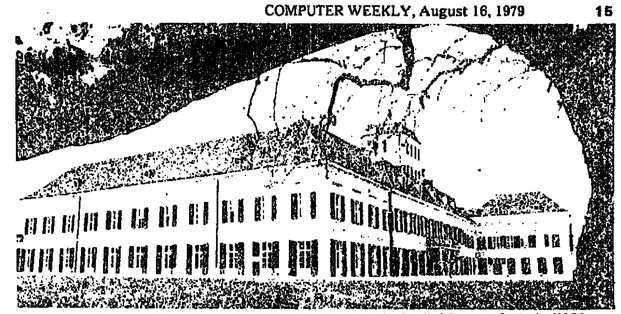
Also available. The following 700 Series Matrix Printers:

	Basic Price
Model 779	£865
Model 700	£1022
Model 701	£1241
Model 702	£1494
Model 703	£1916
Model 761 RO	£1371
Model 761 KSR	£1477

For further information contact Len Watts at the address below:

UKS **Cable & Wireless UK Services Ltd**
83 Blackfriars Road, London SE1 8HA. Tel: 01-928 0261 Telex: 915453

East-West gateway in Vienna



Schloss Laxenburg, near Vienna, home of the International Institute for Applied Systems Analysis, IIASA.

by Dr Ken Beauchamp

IIASA is a non-governmental body, supported by 17 member organisations in countries on both sides of the Iron Curtain, which has the aim of promoting research into the problems of modern societies.

Its close links with national research organisations, and the need of these organisations to exchange information between themselves, have given rise to the plan to establish IIASA as an international switching centre.

Dr KEN BEAUCHAMP, of the University of Lancaster, visited IIASA in Vienna this summer and describes the proposed link-up.

IT is well-known that developments in computer networking in Europe are not confined to the West and that strenuous efforts are currently being made to link computing centres within the Eastern half of the continent.

What is not generally realised, however, is the level of interest being shown by a number of organisations in the processes of information transfer across the East-West gap and in the sharing of computer resource (if not ideology!).

A major contributor to progress in this field is the International Institute for Systems Analysis (IIASA) at Schloss Laxenburg, near Vienna, which I had the opportunity of visiting this summer.

The Institute is an international non-governmental organisation, founded in 1972 and supported by 17 National Member Organisations (NMOs) including our own Royal Society, the National Academies of Sciences in the US and USSR, the Max-Planck Institute in Germany and others.

Its role, determined by an agreed charter, is to promulgate research into large-scale problems related to modern societies.

The scientific staff of about 100 divides its efforts among programmes in the fields of energy; food and agriculture; management and technology; systems and decision sciences; human settlements and service; and resources and environment.

The intention is not to build a computer network . . . but rather to act as a transparent interface or switching centre.

Not only does the Institute conduct significant research in these areas but it also maintains close links with national research organisations. The exchange of information between IIASA and its national partners is important, and it is for this reason that considerable efforts are being made to establish IIASA as a "gateway" between national computer systems on an international basis.

The intention is not to build a computer network, although the term IIASANET is in general use, but rather to act as a transparent interface or switching centre for the various NMOs.

This policy appears to be developing quite successfully. When I paid my first visit to IIASA in 1978 I found their PDP-11/70, operating under the Unix time sharing system, providing local support for a mix of scientific and administrative users (including some text processing) with both batch and terminal access. Some 20 terminals are in use in the various research departments.

The links to external computers at that time were very largely experimental. Leased lines were being used, some of them on a quasi-operational basis, others just for the duration of a particular project.

A Cyber 74 located at the Technical University in Vienna (about 18km away) and an IBM 370/168 at CNUCE in Pisa, Italy were being used via an RJE link for jobs too large to be processed on the PDP-11.

Various communication links had been established for short periods on a dial-up basis to Bratislava in Czechoslovakia, where a CDC 3300 is located, to the European Space Agency in Frascati in Italy, mainly for database access, and to Wroclaw (Poland), Riga (USSR), Budapest and Moscow.

Setting up and operating these links provided valuable experience for the Institute and helped to assess the needs and the organisational framework required for the more permanent communications system at present being arranged.

Now in the summer of 1979, during my second visit, I found that considerable progress had been made, particularly in the difficult areas of international planning and agreements, and while much remains to be done the international links are beginning to be established as a permanent feature of the Institute.

The intention to develop IIASA as a viable switching centre to a number of external networks is at present concentrated on three specific network interconnections: A local link to Vienna, an Eastern link via Budapest and a Western link via Italy.

The first of these is being much improved by the introduction of a dedicated PDP minicomputer in a Vienna location to carry out switching and integrate all the connections to the Vienna area into one packet switching line connected to the IIASA system.

This line operates under HDLC protocol and serves to give permanent access to a PDP-20 and Cyber 24 at the Technical University of Vienna, to the IBM 370 at the International Atomic Energy Agency in Vienna (giving access to its bibliographical search databases (mis and Agris), and also to Radio Austria in Vienna which provides links to Tymnet and Telenet. This last connection opens up the possibility of IIASA developing direct research links with its North American research partners.

A second network link is the establishment of a dedicated line to Budapest with communication mode computers at either end of the line. This project, including line provision and communication equipment, is being funded by the Hungarian authorities and directed by Dr Peter Bakony, head of the Computing Centre of the Computer and Automation Institute of the Academy of Sciences.

The nodes are TPA70 minicomputers designed and built for the Hungarian Academy of Sciences. The TPA70 is a 16-bit parallel logic machine having modular hardware and software architecture. A single asynchronous bus links the CPU and peripherals at a maximum transfer speed of 4 Mbytes-sec. The design is well suited for its communication role and it is supported by a full range of compilers and utilities software.

The software, developed for the Hungarian link, also uses HDLC packet switching protocol and was produced at the Computer and Automation Institute in Hungary. It is hoped to replace this software with X25 protocol next year.

The line between IIASA and Budapest operates at 4,800 bps. The band-width is used by allocating 2,400 baud for batch jobs (file transfer) together with seven 300-baud slots for interactive (editing) jobs. The software includes emulators to permit connection of the various host computers.

While this connection serves to gain access to the CDC 3300 at the Academy, it is also expected to be used as a gateway system to various national systems in the East. A funding decision has been reached to provide a dedicated line from the TPA70 at IIASA to the Moscow Academy of Sciences. A Norwegian minicomputer, NOR10, is to be used as a switching centre at the Moscow end and is being designed to support a NOR50 mainframe and an ES1040, both located within the Moscow Academy.

I understand from Dr Alexandre Butrimenko at IIASA, who is the scientist responsible for these Eastern developments, that further links are proposed, also using an NOR10 node, at the Institute for Information Processing in Prague (Siemens computer) and the Institute for Applied Cybernetics in Bratislava (CDC 330).

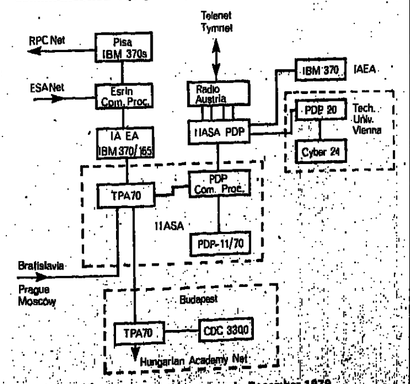


Figure 1. IIASA communications network, December 1979.

In all these NOR10 connections, dedicated lines are proposed, but packet transmission is not expected to be used initially.

A third network connection, also involving the TPA70, is to link directly to the European Space Agency, ESRIN, at Frascati in Italy (IBM 370/155) and to CNUCE (Isituto del Consiglio Nazionale delle Ricerche) at Pisa (IBM 370/158 and 370/168).

This latter connection represents a continuation of a long-standing link with IIASA in which a Wang 2200 installation preceded the TPA70 and served to transmit programs, originally prepared on the PDP-11/70 at IIASA, to Pisa for running on the IBM machine. The software for the Wang connection was written at IIASA by the Computer Networking Group under contract to Wang.

The configuration of the IIASA connections envisaged for the end of 1979 is shown in Figure 1. This includes the dedicated PDP minicomputer with switching function at present being installed to improve the Vienna connections.

Although technical problems associated with IIASANET in its gateway role appear to have been overcome, the inter-institutional and international issues remain and make the problems of managing the links of vital importance. To facilitate the development and management of the network a joint committee has been set up to represent the interests of the NMOs involved.

An agreed brief for IIASA arising out of these meetings is to "... facilitate communications and co-operation between the institutes and individuals working on related projects, particularly East and West, as well as to improve the climate for political and commercial agreement that will lead to effective East-West networking activity."

If this agreement continues to be supported by appropriate funding and access to member states' databases, then a valuable and interesting networking link will have been forged between the scientific communities of Europe.

ADM3

Dumb terminal-Smart buy!

from £495.00 or £30 p.m. Rental (12 months) including maintenance

★ 12 Diagonal 24 line screen
★ 1920 Easy to read white characters ★ 59 Data entry keys
★ 64 ASCII characters in upper case
★ Optional auxiliary keypad ★ Over 75,000 Lear Siegler ADM3 terminals installed
★ Nationwide maintenance

OPTIONS:	Prices:
VT52 Compatibility	Ex VAT/Ex warehouse
Lower case	Delivery £15 up to 5
Answerback	Over 5 (one shipment) – nil
Split baud rate	State Brown/Beige, Brown/Light Blue

CSS (Scotland) LTD. 191 High Street, Kirkcaldy KY1 1JA
Tel: 0592-3196

INTRODUCTION TO PASCAL

How to deal with variations in records

by Dr Judy Bishop

In the eighth part of her 10-part series, Introduction to Pascal, Dr Judy Bishop deals with variations in records, and explains how space for data can be found at runtime.

Dr Bishop is a lecturer in computer science at Witwatersand University, South Africa, and she first became acquainted with Pascal when she was studying for her PhD at Southampton University.

Part 8

RECORDS can have variations, and space for data can be found at runtime. This article explains how this is done in Pascal.

Variations in data

In most commercial applications, records on a file are not all identical. There are variations in the items included, based on factors such as sex and marital status (in an employee file) or type of account (in a banking system). An older language like Cobol provides for variations by allowing a record to be REDEFINED with another structure, but it relies on the programmer to set up and interrogate a key field which indicates which variation is in effect.

Pascal has the same facility but builds the key formally into the record structure. A record has a fixed part and a variable part (both are optional) and the variable part is introduced by our old friend, the CASE statement. The Flexitime programs we have been discussing do not need this facility, but consider the classic example, a typical employee personnel record file. There will be several fields applicable only to married people and extra ones for married women (ie husband's name). Figure 1 shows how such a file would be defined in Pascal and Figure 2 gives examples of instances of possible records in the file.

Each record can only have one variable part, although there may be nested variations. Therefore, we could not have a tag to indicate how many address lines there are (in order to save space on the short ones) as there can only be one tag at each level.

Modes and pointers

Getting back to the Weekly file, we realise that it is going to contain a variable number of records each week and these have to be sorted before the update. Blaze Inc is a medium-sized firm and it is certain that an in-core sort will suffice for these very small records. Having read in the first record and remembered the week number, we can read in each of the other records and put them in their sorted position immediately. The details of the sort are left in abeyance; here we must consider how to store the records as they are read in.

Since there are a variable number, we do not want to declare an array: we want a structure that can grow as needed. Such a structure can be viewed as a linked list of nodes, each node being the accumulated information on one employee. The head of the list and a work variable are the only items that are declared at compile time, that is

```
VAR hend, thisentry :   node;
```

In a running program, these are allocated as pointers on the stack. The stack contains all the named variables. But we do not want to name all the nodes that crop up, so they will be allocated in the unnamed storage area called the heap. The heap is used as follows. A record is read into

```
VAR inputrecord : dailytimes;
```

which resides on the stack. Next, space is created on the heap by means of the procedure called new. New grabs space on the heap and sets the pointer parameter to point there. Diagrammatically, we have Figure 3.

```
TYPE status = (single, married, divorced);
     gender = (male, female);

     person = RECORD
        name : string;
        address : ARRAY [1 . . 4] OF string;
        birth : date;
        taxnumber : integer;
        employeenumber : identification;
        CASE marital : status OF
          single: ( );
          married : (children : 0 . . 24);
                    marriage : date;
                    CASE sex : gender OF
                    female : (husband : string);
                    male : ( )
                    END;
          divorced : (dependants : 0 . . 24;
                      divorce : date)
        END;
```

Figure 1. A person record.

Fixed	JANE DALE 17 FOREST DRIVE BENTONWOOD SUTON 8883 7 6 1945 D321 MARRIED		ROGER TEMPEST FLAT 26 THE FIRS SUTON 8883 7 10 1951 T440 SINGLE	GAVIN FOX 11 HOLLOW CLOSE SUTON 8883 18 2 40 F017 DIVORCED
Variable	2 12 11 65 FEMALE HARRY DALE			0 11 11 73

Figure 2. Examples of variants

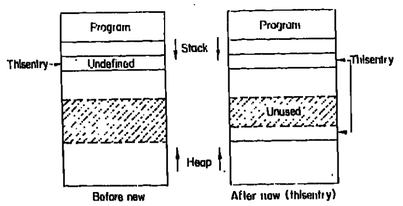


Figure 3. Creating a node.

Pointer syntax

Now, to copy the relevant fields from inputrecord to the newly created node we need to use the symbol ↑. Uparrow is sometimes written as ^ and stands for indirection. Suppose we define

```
TYPE node = RECORD
                number:identification;
                (*other times fields*)
                link :↑node
            END;
```

Then to copy the employee id read in to the one on the heap, we use

```
thisentry↑. number : = inputrecord.employee;
```

This syntax mirrors nicely what actually happens: "Get thisentry. Follow the pointer to the node and select the number field. Assign to this the contents of the employee field of inputrecord."

Forging links

With pointers, we can easily create linked lists by saying

```
thisentry↑. link : = head;
head : = thisentry;
```

These techniques are used universally but very often implemented by means of arrays. Pascal's pointers allow the linking to be done in a far more direct manner, besides providing the additional advantage of storage on demand.

NEXT WEEK:
Part 9: Loose ends. The remaining features of Pascal and the current position on standards.

PASCAL
FOR ALL
LSI 11/PDP 11/VAX 11
Computer Users
OPERATES UNDER RSTS/E, RT11, RSX11
Fast development tools, compact compiled code, fast program execution.
Write or call for further details with comparison on Basic Plus & Fortran IV.
GLOBE COMPUTING LTD.
28/30 MARKET PLACE
LONDON W.1
Tel: 01-5808122
TWX: 261334

OMSI PASCAL
Fast ● Efficient
Supported
PDP-11 and LSI-11
A full standard compiler for RT-11, RSX-11M/D and RSTS/E.
Features embedded assembler code FORTRAN interface, overlays, direct memory access, and interactive symbolic debugger. In use since 1975 — 300 users.
Hourds
7-8 Mill Street
Stafford ST16 2AJ
Tel: Stafford 44221
PDP, LSI-11, RT-11, RSX-11, and RSTS are trade marks of Digital Equipment Corporation, Maynard, Massachusetts

Intel moves out of low profit areas

REVENUES for the first half of this year at Intel have jumped 67% over the same period last year, while earnings rose even more, up 74%, reflecting the company's move out of product areas where profit margins are low.

The company's figures were: Revenue $290.5 million, and profits after tax $33.9 million, which represents $1.59 per share.

For the second quarter of 1979, revenue was $155.2 million, up 66% on the corresponding quarter in 1978, while earnings rose to $18.7 million, a jump of 75%.

Over the past year Intel has made a conscious move out of product areas where the competition is fierce and the margins low.

It is concentrating its efforts instead on devices such as static memories and its microprocessor product range, where the margin is much higher and the competition less aggressive.

DATA ENTRY
A typical Key-to-Disk System comprising:-
8 Keystations (expandable to 31)
12 Megabyte Cartridge Disk
125 LPM Printer (others available)
1600 BPI Magnetic Tape (others available)
for a total inclusive price of £27,043
YES £27,043
1 year Rental terms:- £946.50 per month
3 years Lease terms:- £973.50 per month
WHY PAY MORE?
The Elbit PACT system has an impressive history. It is the third generation system of the Cyberdata family with over 1400 installations worldwide. This powerful, flexible system can be configured to match your requirements. Call us for more information/demonstration.
Elbit DATA SYSTEMS LTD
295 ABERDEEN AVENUE SLOUGH BERKS SL1 4HQ TEL: (0753) 28713
Please send details/arrange demonstration
Name
Company
Address
Telephone

Would service bureaux rather fight than switch?

The factors that hinder service companies from becoming involved with minis are mainly psychological, says A. CHACHARONE, who defines here the main problems and advantages in adding minis to the bureau's repertoire.

Chacharone has been in marketing with CDC for a total of nine years, and at present is working for CDC Greece in Athens.

MINICOMPUTERS have been perceived as a threat to the service bureau industry, and to date the service bureaux have reacted defensively against the enemy. In reality distributed processing and minicomputers represent a significant opportunity for service bureaux, and when products are properly planned can ensure a customer's long-term commitment as a services client.

Factors preventing the entry of minis into the services arena by service companies themselves are primarily psychological. Technical issues for the most part are minor and readily resolved.

This article deals with the psychological factors and describes the basic technical characteristics needed to satisfy a sample services market.

The initial reaction of service companies to minis is to reduce charges to customers. This reaction is detrimental to service bureaux since the lowering of price only affects the profit of the services vendor and has no impact whatsoever on the minicomputer vendor's strategy. The margins provided in the development of standalone mini systems as a consequence of advances in technology are large enough to withstand price pressures.

Microprocessors will allow mini vendors to lower hardware costs while protecting their investment in software.

An initial psychological adjustment that service companies must make is to accept the fact that while certain businesses are a natural for a mini offering, minimal effort should be spent trying to salvage businesses that accurate cost analysis reveals to be unprofitable, especially if they are unprofitable on a cash flow or incremental basis.

Key to disc applications, word processing and certain text editing applications which can be accommodated with the advance versions of Wylbur-type extensions to IBM operating systems are best kept on minis. The resources required to accommodate this market are significant and cannot be recovered at competitive price levels.

The CPU usage and revenue as compared to the total resources needed to accommodate these types of application is small. Initially it may appear that these applications which require large amounts of mass storage, and which historically have been very profitable, may be cost-effective. This is no longer valid since pricing pressures within the industry are causing the incremental profit margins of mass storage to be continuously reduced. Here, also, advances in disc technology are forcing reductions in the price of disc storage.

Service companies cannot be "everything to everybody" and must carefully assess their markets, even the segments which are thought to be certain sources of revenue. This continual evaluation requires a re-orientation of the thinking of sales personnel, and retraining.

In short, it requires *change*, which is psychologically challenging.

A second psychological factor that is hampering the aggressive use of minis in a services context is the reluctance of service bureaux to trade services revenue for a hardware offering that complements the services products. Service companies "would rather fight than switch", as the saying goes. The short-term advantages favour the mini vendor. After all, he is accommodating a market that is a prime one for hardware acquisition.

Service companies must be willing to trade services revenue for hardware revenue as long as the marriage of these two offerings dictates a continual relationship with the large host computers of the services vendor. If the offerings are not integrated, the two products merely become two separate businesses. The hardware offering can be structured to provide incremental profit margins greater than those which the replaced services offering provided, as long as the mini product is developed for large markets.

Companies should avoid selling one of a kind, which most often results in a loss. Selling a few copies typically leads to small profits.

> ***Continuous evaluation [of markets] requires a re-orientation of the thinking of sales personnel, and retraining. In short, it requires change, which is psychologically challenging.***

The third major psychological hindrance to the use of minis is the mystique that has been created around teleprocessing. Striving for the ultimate in communications is not only very intimidating to management, but costly and unnecessary in today's market. The ultimate never gets to market. It remains in the laboratory.

Vendors should start with basic telecommunications techniques and proceed to expand their network as a function of realistic market demands and with minimum impact on host resources. In the services field, business communications beyond the host, ie communications emanating from a mini, should be the primary growth pattern.

This makes optimum use of the mini's resources while ensuring a continual relationship with the host for processing power. In addition, it personalises the network to the individual customer's needs, and minimises the impact on host resources. Finally, pricing is simplified, since costs can be directly identified with the user, his particular application, and his use of the system.

In addition to the psychological barriers that hamper the acceleration and integration of minis into the services vendor's offerings there are psychological pressures in the market that favour the acquisition of in-house mini systems. Today's computer user, even if it is his first venture with computers, wants some capability on his premises and under his control.

Clients have acquired a strong appetite for on-site equipment which is more capable than the basic terminals that merely read cards and print reports. The cost of an intelligent terminal that can perform as a computer, as compared to that of a basic remote job entry terminal, is very small.

Security, program development, and operational control are some of the preachings of mini vendors. On the other hand, the naïve computer user has little or no appreciation of the real costs associated with having his own computer, and only after the initial decision to acquire a system has been made and after the system has been installed are the true costs recognised. By this time it's too late, and often too embarrassing, to change.

Users of service bureaux would welcome having their service vendors provide their migration from the early teletype-compatible and remote job entry terminals to "some offering" that bridges the gap between a full-blown in-house system, and something with intelligence that can fulfil the dual capability of local processing and selective use of the large host system.

Reliability is another factor that works in favour of standalone mini procurements. Today's minis are much more reliable for technological reasons, and also because the operating software is typically less complicated.

IBM's withdrawal from the service bureau business in the US has probably accelerated the company's development of small system offerings and has resulted in the single most significant force in small system sales. Advertising campaigns aimed at the small system user have been intensified, and continually stress business-related benefits. Furthermore, small business sytems are a natural extension of the office products offering and can be handled in a low-key manner.

Examples of markets that typically represent excellent opportunities for a combination services and mini offering include:

● Connected by geographic location: Users are concentrated within a small geographic boundary. This boundary can be limited to the confines of a building, building complex or state boundaries.

● Dial-up service: Users can use dial-up telephone service to access the mini system. This implies short distances and short duration messages. In certain cases where the geographic area is very small, dedicated lines can be more practical than dial-up. In the final analysis, this becomes an economic decision. The technology is proven and easily implemented.

● Transactions: Applications that use inquiries into database files, with the generation of appropriate transactions, are prime for the dual product offering. Optimum applications are those which have minimal activity per given record in a processing period.

The product characteristics that are needed properly to integrate the two offerings, services and minis, are:

Files. Files between the large host system and the minis should be completely compatible, or at the very least any file incompatibility should be completely transparent to users.

Loading. The host system should be able to download the mini with databases, and also, upon command, be able to retrieve files from the mini.

Products. Programming languages on the mini should at a minimum be a subset of the languages used on the host, and completely usable on the host with, at most, control card changes. This would provide immediate back-up capability which the mini vendor cannot offer.

Communications. The mini must have an excellent telecommunications capability, primarily in the area of low-speed telecommunications. The capability should cover the spectrum of 30-1,200 chps terminals with a protocol completely compatible with the host's. In certain applications, economics may dictate the need to handle clusters of terminals functioning through a localised concentrator.

> ***A psychological hindrance to the use of minis is the mystique that has been created around teleprocessing. Striving for the ultimate in communications is not only very intimidating to management, but costly and unnecessary in today's market.***

Languages. The mini, at a minimum, should support Fortran and Ansi Cobol, and have a common file manager and communications software interface. The languages should satisfy the compatibility requirement noted above. RPG II was purposely omitted from the recommended list since it does not serve the long-term interest of the user.

In addition to the above characteristics, the capability to perform hardware maintenance from a remote location and to upgrade and maintain the mini software via telecommunications would in the long run provide better and more economical support.

The services vendor should be prepared to assume responsibility to manage the maintenance function, provide training and provide professional services to the user. In other words, the services vendor should provide "one-stop shopping" and not force the user to search and sub-contract separately for the services needed to have an on-site system.

Add to these benefits the back-up provision noted above, and this gives the services vendor a superior offering.

A sample of the industries or markets that could be served with products having the above-noted features include:

● **Graphics.** This market requires considerable computer resources to handle the current state-of-the-art graphics terminals. An ideal marriage of mini and host should be developed, where the mini would handle the complete control of the graphics terminal, format data for processing on the host, and unformat data from the host in a form compatible to the graphics terminal. Detailed technical analysis, optimisation techniques and program storage of the library programs would be done at the host.

● **Local government.** Many counties are not large enough to justify a large data processing system and very often enter into shared relationships for the acquisition and use of data processing systems. Applications such as personnel records, payroll, and utility bill processing are a small sample of the types of application which could be integrated very conveniently in a mixed mini and large host offering.

● **Computer-based education.** Teleprocessing costs will not permit the direct communication with a large host typically required to satisfy the need of the CBE market. This is especially true in Europe where telecommunication technology lags behind the US standard and costs are considerably higher. A practical solution would be to provide a mini which contained the specific courseware in use and could control a small number of CBE terminals.

● **Scientific.** The scientific community, typified by pre- and post-processor processing coupled with large analytical systems, is another major market that can be served with a carefully planned mini and large host offering.

In conclusion, the services vendor's success can be optimised as long as perpetual relationships are developed with the clients. Minis can be a reason for a long-term relationship.

Visit the
PROFESSIONAL Viewdata EXHIBITION
● There is enormous scope for the use of viewdata as a private/internal communication system for large and small businesses and organisations alike.
● The Professional Viewdata Exhibition is planned to bring together information providers, those interested in the use of teletext and viewdata for private use, and the providers of the necessary hardware and services.
● It shows what equipment is available, what it can do and who supplies it, and how it helps solve problems of information storage, retrieval and dissemination.
● An exclusive event for professionals, the Exhibition is presented by "Viewdata & TV User" magazine with the support of the Association of Viewdata Information Providers, the Post Office and the Department of Industry.
● It is held concurrently with the AVIP members' November conference, also at the West Centre Hotel.
(If you are a Prestel Subscriber, key # 46606 # for more details)
A DEMONSTRATION OF EQUIPMENT AND SERVICES FOR THOSE PROFESSIONALLY ENGAGED IN TELETEXT AND VIEWDATA
West Centre Hotel, Lillie Road, Fulham, London,
November 7 & 8
from 10 am each day.
Nearest Underground station — West Brompton on the Wimbledon branch of the District Line. On leaving the station, turn right, the West Centre is clearly visible a few minutes' walk down Lillie Road. There is no charge for admission, which is by registration at the door.

Contact Steve Bass

market

MARKET RESEARCH ANALYSTS

TICKET ORDER

COMPUTASTARS

To: Computastars, 117B High Street, Croydon, CR0 1QG.
Please supply:

..... Adult ticket(s) at 60p

..... Child ticket(s) at 30p (under 14)

for the finals of the Computastars Competition at the Crystal Palace Sports Centre on Saturday, September 29.
I enclose a cheque/PO for ..... made payable to Computastars.

PLEASE ENCLOSE A STAMPED SELF-ADDRESSED ENVELOPE

PUNCH CARDS £85 — PRINT-OUT £60

DATA-WASTE LIMITED
01-960 1000

WATCH YOUR PARTY FUND GROW!

FOR SALE

Philips P350

Offer to

Mr. Hughes
01-836 7513

DATA J MINICOMPUTER SYSTEM

Translator Model DD101 processor with required flexible disc drive units
Digital Model LA36 Dot-writer Printer. 30 characters per second
Two Newbury Model No 7001 VDU Units now
STORT WHOLESALERS LTD., 21 Hockerill Street, Bishop's Stortford. Tel. 62424.

Computers Bought and Sold

E O B EQUIPMENT Ltd.

Tel: 0783 293818
Telex: 537763

WANTED

To purchase, all user IBM, ICL computers.

J. & M. COMPUTERS
The Stables, Plains Road
Great Totham, Essex
Tel. Maldon (0621) 892333

Nelson Computer Services Ltd

Suppliers of new and refurbished equipment

BURSTERS, DECOLLATORS, ETC.
DISC, TAPE, CARD STORAGE
DATA PREPARATION EQUIPMENT
SPECIALIST IN IBM AND UNIVAC

BUY — SELL — LEASE — RENT

IBM 029/059/129, UNIVAC 1701/1710 WILES BURSTER DECOLLATERS, BPC A FRAME DECOLLATER, PET 2 PART DECOLLATER BPC 4 PART DECOLLATER TRIMMER, TWINLOCK BINDERS AND STORAGE

80 COLUMN HAND PUNCH
Ex-stock from £95 + VAT

Ring Mike Jacques on Rossendale (07062) 29125
ST JOHN'S COURT HAWTHORNDALE LANCS BB4 7PA

CONTINUOUS STATIONERY OPPORTUNITY

Our long established printer-friend offers you a short cut to expansion with very substantial savings by participating in his R.D. Grant-development

Contact G. Lloyd-Williams, Clumdale (SEDA) Ltd., Petworth Road, Chiddingfold, Surrey, GU8 4UU. (042-879 4828).

WHY PAY WEST END RENTS TO LOOK AFTER THE CITY?

5,000 sq. ft. Offices/Light Industrial/Storage

Only 5 minutes from London Bridge station.

Just £2.50 per sq. ft.

Ring John Nuthall 01-834 4371

OUR BUSINESS IS YOUR IBM HARDWARE

Lease · Buy · Sell

PREMIER COMPUTERS

3 UNION COURT, RICHMOND, SURREY TW9 1AA Tel 01 940 1134 Telex 926734

CONTRACT or PERMANENT

We are the Specialists!

ANALYSTS PROGRAMMERS OPERATORS
VDU/KEY PUNCH OPS DATA CONTROLLERS

FOCUS
Computer Services Limited
01-487 5781
(emp.agy)

CIG COMPUTERS LIMITED

AVAILABLE FOR LEASE

4331	— September 1979
	— December 1979
	— January 1980
	— February 1980
	— March 1980
4341	— July 1980
	— September 1980
370 Systems	— IMMEDIATELY

Please contact: Miss A. Tirelli
or Mr. D. Thomas
Tel: 01-788 8212
56/70 Putney High Street
London SW15 1SF

place

FOR SALE — Dataprinter

For Advertising Rates
PHONE 01-261 8293

HEXAGON

computer services

145 WARDOUR STREET LONDON W1V 3TB

Tel: 01-439 3671

Contract & Permanent recruitment
Total DP Support at its best
Programming · Operating
Data Preparation · Systems
Data Control · Technical Support

---

dpm

DIRECT DATA MARKETING LTD

NEW AND REFURBISHED PERIPHERALS

- IBM CARD PUNCHES 029 026 059 129
- VP/VIP PUNCH/VERIFIERS
- CODE CONVERSIONS AS REQUIRED
- DIGITAL TERMINALS NEW LA 34
- BURSTERS AND DECOLLATORS
- BUY, RENT OR LEASE
- MAINTENANCE PROVIDED

CONTACT US.
44 HIGH STREET, BRENTWOOD, ESSEX
CM14 4AJ
Telephone Brentwood (0277) 229379 or 213273

WEBSTER D/P SERVICES LTD.

FOR USED DP EQUIPMENT
BUY OR SELL THROUGH WDP

NEW DE LUXE 80 COLUMN HAND PUNCHES (EX-STOCK)

WDP

01-464 9011

WEBSTER D/P SERVICES LTD.
65 WIDMORE ROAD, BROMLEY
KENT BR1 3AA

FOR SALE — AVAILABLE AUGUST

ICL 1902T 64K. 5 years old maximum. £20K
Core Store 32K 2½ years old. £2K o n o
Core-store 32K 2 years old. £8K o n o.
EDS + Y switch (new). 5 years old £6K o n o
EDS 60 + Y Switch (new). 5 years old. £k o n o
EDS 80. 4 years old. £6K o n o
EDS 80. 2 years old. £8k o n o
1971 MT 20 + 2. 5 years old. £2k o n o
CR 300 (2102C 5 years old £1K
LP 600 (2409). 5 years old. £5K
Scanner system. 5 years old, £3K

All of above system currently in use 16 hours per day — 150k Private sale

Please contact: Mrs. Janet Holmes, Slough 34506

Knight is right for contract staff

Knight Computer Services Ltd.,
14 Old Park Lane, London W1Y 4NL

Knight **01-491 4706**

Staff Services Division of BOC Datasolve Group and a member of Computing Services Association

---

KEY OPERATIONS ASSISTANCE LTD

CONTRACT

☆ *OPERATORS* ☆
☆ *PROGRAMMERS* ☆
☆ *PUNCH OPERATORS* ☆

LEADING SUPPLIERS OF CONTRACT OPERATIONS PERSONNEL THROUGHOUT EUROPE

SAVE TIME AND MONEY
CALL US FIRST

LONDON
01-439 7550/9
MANCHESTER
061-833 9355/7

EUROPS — EUROPS

27 NOEL STREET LONDON W1

LOOK AT THE CROWD IN OUR MARKET PLACE

Our Market Place feature (today on pages 12/13) enables you to reach a vast 82,000 circulation of whom no less than 91% personally request their copies. No wonder we attract more display advertising than any other computer journal. 35% of all computer ads appear in our pages — and Market Place is the most cost-effective of all for leasing, second-hand hardware, maintenance services, wholesale goods and contract staff . . . The rates are

3.35 s.c.c. £9.35
36-98 s.c.c. £7.70
99 s.c.c. and over £6.05
Series discounts: 7—5%, 13—10%, 26—15%, 52—20%

COMPUTER WEEKLY

FOR SALE—USED

QUME, DIABLO DAISY WHEEL PRINTER NEWBURY 7004 VDU'S. NCR 8200, DATA GENERAL NOVA 3/12 32KW.

ANCIENT & MODERN COMPUTERS LTD.
TEL. 048-67 80203

Qume

Sprint 5/45
Daisywheel printers
RO & KSR Ex Stock

Rohan Computing
Southam (092681) 3541

WANTED

NCR 8200 128k

1 disc 2 VDU's
1 printer
or close match

Tel: John van Someren on 01-283 8566

BURROUGHS COMPUTER B 3700 FOR SALE

Date of installation: August, 1975

Available for delivery: November, 1979

List price: £434,000.

Our selling price: £130,000 F.O.B. German airport. The computer is under continuous maintenance by Burroughs and is in full running order.

Configuration
— CPU B3751 with B1/O channels, 200 KB self-correcting memory, floating point arithmetic
— SPO-console
— Head-per-track disk 10 MB
— Dual-drive disk-pack 2x87MB = 174 MB
— Card reader 300 cpm.
— Line Printer 1250/1600 lpm, 132 print positions
— Mag-tape-cluster, 4 stations, 800 BPI-NRZI/1600 BPI-PE
— Multi-tape-control for 4 lines, 2 synch. adapters 2400 Baud, 1 asynch adapter 9600 Baud

For details please contact:

Miller EDV GmbH
Ludwig-Richter Str. 12A
7150 Backnang/West Germany
Telephone 01949-7191-61087

PDP 11/04 /34 /60 /70 COMPUTER SYSTEMS. COMPETITIVE DELIVERY & PRICES

FAST DEC! FROM

Systek

HR House, High Road,
North Finchley, London N12 0AZ
Tel: 01-349 2911 Telex: 28227

GOVERNMENT COMPUTING

MINISTRY OF DEFENCE
RAF PMC INNSWORTH

A 16 Key Station Processor Controlled Keying system, producing ICL 2900 compatible magnetic tapes (9-track PE 1600 bpi) with the ability to produce printed output and incorporating software facilities to assist in controlling work at both keystation and supervisor levels, is required for installation by August 1980.

APPLICATIONS FOR COPIES OF THE SUMMARY OF OPERATIONAL REQUIREMENTS SHOULD BE MADE, WITHIN ONE WEEK OF THE PUBLICATION OF THIS ADVERTISEMENT, QUOTING REFERENCE CEH/39/TO:

CENTRAL COMPUTER AGENCY
Riverwalk House (Room 822)
157-161 Millbank
LONDON, SW1P 4RT

Appointments

THE INDUSTRY NEWSPAPER FOR DP PROFESSIONALS

COMPUTER WEEKLY

Classified Department, Dorset House, Stamford St, London SE1 9LU

Box Numbers: Should be addressed to the box number in the advertisement c/o Computer Weekly at the above address

Classified Rates: £12.00 per scc
Series 7 = £11.00 13 = £10.00
26 = £9.00 52 = £7.00

Copy Deadline: 5.30pm Monday prior Thursday publication date. Complete artwork up to 12 noon Tuesday. Advanced space reservation is advisable

LONDON
Assistant Classified Manager:
Chris Prier, 01-261 8028
Eddie Farrell 01-261 8097
Mark Williams 01-261 8019
Mark Pulver 01-261 8174
John Farrar 01-261 8098
Ken Walford 01-261 8454

MANCHESTER/GLASGOW
Owen Kelly 061-872 4211
Geoff Aiken 061-872 4211

BIRMINGHAM/BRISTOL
Basil McGowan 021-356 4838

MYRIAD

SYSTEMS ANALYST COULD YOU ADVISE OTHERS?

SOUTH LONDON MIN. £8000

Our Client, a leading Computer Services Organisation, is seeking additional staff to join their team of D.P. Professionals primarily in a Lecturing capacity. Experienced Analysts with enthusiasm and proven communications skills are required to assist in the training of personnel for both the Public and Private Sectors of Industry and Commerce, using well-established techniques. In addition to lecturing the successful applicants will be responsible for advising and assisting attendees, preparing new course material and generally supporting our Client's operation.

When not actively involved in training and advising, the successful applicants will be engaged in consultancy roles assisting our client's customers. Therefore, candidates must have a minimum of three years' Analytical experience most preferably in a commercial environment. As these positions carry responsibility for the careers of others candidates must be true D.P. Professionals.

These are Senior Positions in a highly successful organisation. The company offer a good pensions scheme, expenses and salary in keeping with a Senior Position, and are prepared to relocate the right people if necessary.

Ref. SE1/1608

PROGRAMMING PROJECT LEADERS

W. LONDON TO £9500

To manage teams of up to eighteen programmers, these positions offer the people appointed an excellent opportunity to establish themselves in a managerial role whilst retaining a technical involvement.

In depth COBOL and IBM OS/VS experience is essential with VSAM knowledge being highly desirable. Applicants should be familiar with structured design/programming techniques and be prepared to enforce professional installation standards.

The PROGRAMMING PROJECT LEADERS will be responsible for recruitment and training of staff, project estimating and regular progress reporting, therefore man management skills are essential. Technical awareness must be maintained in order to assist higher management in the evaluation of new programming methods/techniques and software releases.

As one of the world's major multi-national organisations, our client can offer a very interesting, secure and rewarding future to the ambitious professional including the opportunity for some European travel. Additional benefits include free life assurance, free BUPA, contributory pension scheme and generous relocation expenses where appropriate.

Ref. NW1/1608

MYRIAD APPOINTMENTS LIMITED
30 Fleet Street London EC4Y 1AA
01-353 0981 24 HRS.

TEESSIDE POLYTECHNIC COMPUTER CENTRE

Attention Computer Science Graduates!

Applications are invited from new graduates and experienced programmers to fill the following posts in the Polytechnic's Computer Centre. The Centre is currently implementing a Powerful UNIVAC computing system with 1.2 GIGA bytes of mass storage supporting over 90 interactive terminals. In addition the Centre is planning to implement a graphics laboratory housing a wide range of modern and sophisticated graphics equipment. At the end of these planned developments the Centre will be one of the most powerful computer installations in the British educational establishment.

PROGRAMMER ANALYST or SENIOR PROGRAMMER ANALYST P.CU/11

(Graphics and Communication)

To join a team which will be responsible for design and implementation of the software for the graphics laboratory. The successful candidate would also be able to take part in all developments concerning the Centre's communication network.

PROGRAMMER ANALYST or SENIOR PROGRAMMER ANALYST P.CU/12

(Operating System and Compilers)

To join a group of specialists in implementing and enhancing UNIVAC's most modern operating system, level 36 of EXEC-8.

The Centre supports a wide range of programming languages and application packages. To the suitable candidates these posts offer excellent opportunities of both technical and professional development.

Salaries, according to qualifications and experience, will be on the following scales:

Programmer/Analyst £3,420-£4,761 + £312 supplement
Senior Programmer/Analyst £4,920-£5,748 + £312 supplement
(plus cost of living rise of approx. 9.6%)

Informal enquiries may be made by phoning Middlesbrough 224176, Extension 12. Application forms and further particulars may be obtained from The Personnel Section, Teesside Polytechnic, Borough Road, Middlesbrough, Cleveland, TS1 3BA (Middlesbrough 244176), Extension 13. Closing date: 31-8-79.

PROGRAMMERS & OPERATORS

FREE LIST of vacancies to suit you
ALL AREAS
Phone now 01-626 0171

The best CHOICE of Computer Appointments
CHOICE RECRUITMENT 120 Cannon St, London, EC4 Tel. 01-626 0171

COBOL PROGRAMMERS

★ London & S.E. England ★ Salaries to £7,000 ★ call

MACROLOGIC
(recruitment consultants)
01-278 5634

CAPITAL APPTS.

FORTRAN
Programmers urgently required for Industrial and Scientific Development.
£3,500-£6,000
ALL AREAS
Phone for free list of vacancies
29 Windmill St. London, W.1.
637 5551 day, 636 9659 eve.

SOFTWARE PROFESSIONALS to £8500

LONDON + mortgage subsidy

SET UP IN THE EARLY SEVENTIES with a sophisticated computer system using a powerful mainframe and mini-computers and having reaped the benefits of substantial home grown Real Time and Database Software, our client is . . .

PLANNING FOR THE EIGHTIES when the options seem numerous and exciting. With hardware based on new Fourth Generation Mainframe they are evolving a strategy which will allow reliable and economic exploitation of present and future technology.

IF YOU HAVE A VISION of the future and are grounded firmly in the realities of a business environment, come and join this small team of dedicated computer professionals who are engaged in a wide variety of work ranging from Software Design and Hardware Selection to Systems Efficiency. You are likely to be a Graduate with at least four years' experience in the computer industry of which at least two years would have been spent primarily on Software.

Why not ring PETER BARSON now on 01-839 6087.
BARSON, TAYLOR & WARD 107 Jermyn St., London, SW1

BARSON TAYLOR & WARD LTD

We know where the good jobs are!

LEEDS

Systems Analysts
This client requires systems analysts who should preferably have a programming background. Analysis experience of general commercial applications is required. ICL equipment. *(Ref DR/43)* to **£6000**

Systems Analysts
A major organisation requires a number of additional systems analysts. Modern installation using latest equipment and major development over a wide range of application areas. *(Ref DR/44)* to **£6500**

Programmers
Another of our ICL user clients wishes to recruit COBOL programmers. There are several vacancies which will enable us to accommodate candidates with between 1 and 3 years experience. *(Ref DR/45)* to **£6000**

SOUTH YORKSHIRE

Systems Analysts
A large international organisation with U.K. headquarters in South Yorkshire wishes to recruit additional systems analysts. 3 to 4 years experience of general commercial and/or production systems. *(Ref DR/46)* c **£6000**

EAST MIDLANDS

Systems Analysts
First-class opportunities for analysts with 2 or more years experience of commercial/financial systems. Large installation background would be advantageous. *(Ref DR/47)* to **£6500**

Programmers
COBOL programmers with a minimum of 1 years experience required in progressive installation. Career development prospects and company benefits are excellent. *(Ref DR/48)* to **£5800**

NORTH EAST

Systems Analysts
Analysts are required by a major international organisation. Candidates should have about 1 years analysis experience plus 2 years programming. *(Ref DR/49)* c **£5500**

Systems Programmers
This client seeks systems programmers with a good IBM background. Particular knowledge should include OS/VS and some ASSEMBLER. *(Ref DR/50)* c **£5000**

Programmers
This company has a number of vacancies for programmers at all levels of experience. Good graduates with no previous experience would also be considered. *(Ref DR/51)* to **£5000**

Technical Support
Operations analysts are required by this IBM user. Previous knowledge of 370 important and particularly OS/VS. Good opportunity to gain experience in a progressive installation. *(Ref DR/52)* c **£5000**

Interested? Send coupon or 'phone Cathy Scott.

HARROGATE

Consultants **£** .... *very high*

Additional consultants are required to assist in achieving our expansion plans which involve the establishment of a complete *Nationwide* service.

We have the backing, the clients, the demand for our services and the knowhow. You must bring a good dp background plus the ability to sell our service.

Excellent salary, benefits and performance linked bonus plan will provide exceptional earnings and job satisfaction.

Full written details please to
Managing Director, Data Resources Agency, Freepost, Harrogate HG1 5BR.

NAME ____________ AGE ______
ADDRESS ____________
PHONE HOME ____________
BUSINESS (will be used discreetly) ____________
YRS ANALYSIS ______ YRS PROGRAMMING ______
MACHINES USED ____________
LANGUAGES USED ____________
SALARY ____________
SALARY REQUIRED ____________
JOB SOUGHT ____________
REF No. ____________

—Recruitment Agency—
DATA RESOURCES AGENCY · FREEPOST · HARROGATE
NORTH YORKSHIRE · HG1 5BR · TELEPHONE HARROGATE 509865

Contracts for Analysts and Programmers

UK
IBM OS COBOL + IMS or PL/1 — Kent
IBM OS COBOL + BAL — Surrey
IBM DOS COBOL A/P — Surrey/Wales
IBM DOS COBOL — S. Wales
IBM DOS PL/1 S/A — London
ICL 2900 VME/B COBOL — London/Kent
ICL MTS Communications — Midlands
Ventek Datashare — Middx/London
Honeywell COBOL + IDS — N. London

OVERSEAS
PDP Fortran/Assembler — Brussels
Mini Graphics — Switzerland
IBM DOS PL/1, CICS + Total — Holland

Call Richard Kaluzynski, Neil Williams or Suzy Gillam for details.

INTEL 8080 EXPERIENCE?

WORK ON THE COAST THIS SUMMER

We have several immediate and future vacancies in Sussex for people with sound Intel 8080 experience

If you have a permanent job or are available now we will be happy to discuss the opportunities awaiting you

Call Neil, Suzy or Richard

MAKE YOUR WINNING MOVE

Opportunities for Operators

ALWAYS RELY ON KNIGHT FOR THE BEST MOVES
Sally Oliver is here to give advice and keep you in check with a variety of permanent opportunities. OR if you have a minimum of 2½ years' operating experience and contracting is your business, then Sue Smyth, June Mogg and Jane Asbury can give you an up-to-date list of immediate contracts and details of those still in the pipeline 01-491 4706.

BURROUGHS OPS WANTED — ALL AREAS
Experience on minis, or any small series. Contact Jane Asbury or June Mogg for further details

ICL 1900/2900 OPS LINCOLNSHIRE
Start September — 3-month contract
Ring June Mogg or Sue Smyth

BURROUGHS 1700/1800 OPS LONDON
Various immediate assignments.
Ring Jane Asbury or Sue Smyth, 01-491 4706.

IBM 370 — OS/VS1 & VS2 OPS
Long- and short-term contract, £160 p.w
Call Sue Smyth or Jane Asbury.

ICL 2904 — EXEC 1 WILTSHIRE
Immediate contract. £160 p.w.
Call June Mogg or Jane Asbury, 01-491 4706.

TERMINAL & V.D.U. OPS—ALL AREAS
Excellent rates. Varied immediate contracts.
For further details contact Jane Asbury or June Mogg.

IBM DATA 100 OPS LONDON
Start Monday; 1-month contract.
Ring Sue Smyth or June Mogg, 01-491 4706.

IBM 370 DOS VS POWER OPS KENT
Wanted for short-term contract NOW.
Call Sue Smyth or Jane Asbury, 01-491 4706.

Knight

Phone anytime, or for an application form leave your name and address with our answering service.

Knight Computer Services Ltd.,
14 Old Park Lane, London W1Y 4NL.

01-491 4706
OR WHEN BUSY 01-439 3411

Product Development with Scicon Consultancy International

Scicon Consultancy International is part of Britain's largest computing services group.

Their reputation has been based on professionalism and a thorough understanding of the latest technological advancements including some of which are unique to Scicon.

They have recently formed a Products Division which is primarily concerned in the development and marketing of software packages and hardware facilities in the mainframe and micro areas. This Division is currently looking for:–

Applications Software Product Consultant
Up to £10,000 p.a.

To identify and develop product areas relating to IBM mainframes. A strong commercial systems background, a thorough knowledge of IBM and compatible systems and leadership experience is required. Ref. MB/2651.

Micro Product Consultant
Up to £10,000 p.a.

To investigate and advise on the use of micro-based products in the areas of the oil industry, small shopkeeping and motorcars. They require someone with a thorough understanding of micro computer technology combined with sound appreciation of commercial Data Processing. Ref. MB/2652.

Technical Support Consultants
Up to £7,000 p.a.

To be actively engaged in the design and support of the products areas. Programming/designing experience of commercial systems in either a mainframe or micro environment would be an advantage but training will be given if necessary. Ref. MB/2653.

If you have the above qualities, enjoy direct contact with clients and a stimulating challenge, then you should find these positions of considerable interest.

Based in Central London, the company offers benefits associated with a company of their standing.

Please apply to Marilyn Black on 01-828 5356 quoting the appropriate reference number.

John Goldsmith Computer Professionals

Computing Services Association

John Goldsmith (Computer Recruitment) Ltd., 16 Buckingham Palace Road, London SW1. Telephone: 01-828 5356 – 24 hour answering service. Telex: 916779

Recruitment Consultants

A Company of the Provident Financial Group

Land Of Opportunity?
SALES!
TRAINING IN SAN FRANCISCO

Basic £7,000-£9,000+ On Quota £15,000+

After only 4 years of trading, our clients have:

200+ INSTALLATIONS
T/O OVER $56m
and a solid reputation for RELIABILITY and PERFORMANCE.

They have now been established in the UK only 18 months and have:
OVER £1 MILLION OF SYSTEMS DELIVERED

Among their first customers:
ONE OF THE BIG 5 CLEARING BANKS
GOVERNMENT ESTABLISHMENT

They are poised to DOUBLE T/O next year but to do this they need YOU!

YOU will be selling one of the Most Advanced Multi-Processor Systems available in the market place today with an average order value in excess of £100,000.

YOU will be well supported by a Highly skilled team of Professionals (Hardware & Software) currently outnumbering sales by 5 to 1.

REALISTIC QUOTAS + GENEROUS BASIC SALARIES + LIBERAL COMMISSION + CO. CAR + BUPA + SHARE SCHEMES will ensure no financial hardship! and continued growth will mean Excellent Management Opportunities.

If YOU have a good track record in computer sales this could be for YOU. Are YOU ready?

If so, Call Now. Ref. CS 1156.

db executive (kingston) ltd
59 EDEN STREET, KINGSTON UPON THAMES, SURREY KT1 1BW
TELEPHONE: 01-549 8441-9

NORTH WEST VACANCIES

NORTH MANCHESTER c £5,200
BASIC + PROGRAMMERS
Expanding company requires a number of Programmers with at least 12 months experience in BASIC or BASIC + on PDP 11's. Opportunity to grow with the organisation.

CHESHIRE to £8,500
REAL-TIME SPECIALISTS
Our client, a major professional consultancy is seeking experienced staff in the process control, and/or defence/command environments. RSX11, RTL11, CORAL 66 backgrounds ideal. Advanced systems developments in progressive organisation.

MANCHESTER to £5,500
ICL ASSEMBLER PROGRAMMERS
Our client is seeking experienced ICL ASSEMBLER programmers to work on a variety of applications in a dynamic and exciting environment. Excellent prospects with this go-ahead company.

PRESTON to £5,400
COBOL PROGRAMMERS
Large IBM installation is seeking additional programmers with over 12 months COBOL experience. Large on-line developments.

MANCHESTER c £6,400
CORAL 66 ANALYST/PROGRAMMERS
To meet business expansion our client is seeking an Analyst/Programmer with good CORAL 66 experience. Outstanding prospects and benefits.

MANCHESTER c £5,000
RPGII PROGRAMMER
A programmer with at least 18 months RPGII experience in a 2900 installation is needed to work on commercial systems. Small friendly team.

LIVERPOOL £6,400
SYSTEMS ANALYST
Large, committed DP user is seeking 2 or 3 Analysts with around 3 years design/systems experience. Hardware background is not important, but candidates must have seen systems through.

PRESTON c £6,000
SENIOR PROGRAMMERS
Our client has recently changed hardware and is at the beginning of a large development program. The company require COBOL programmers with production and commercial application experience to head programming teams.

MERSEYSIDE to £7,000
SENIOR ANALYSTS
Very good benefits and bonus scheme can be enjoyed by Analysts with in-depth experience in large systems.

OLDHAM c £5,100
COBOL PROGRAMMER
Our client is seeking a COBOL programmer with either an ICL 1900 or IBM 370 background. Large development projects and excellent career prospects available.

OLDHAM £6,500
SENIOR PROGRAMMER
Supervisory experience, together with in depth COBOL knowledge is needed to fill this new post with a large manufacturing company. On-line and Data-base developments.

MANCHESTER to £6,000
SYSTEMS ANALYST
A young, well educated Analyst, with at least 18 months experience is required by this friendly installation. Some programming knowledge is an asset, but is not essential.

Phone **STEVE SYKES** on **LEEDS (0532) 444185** (day) reverse charges if necessary or on **LEEDS 662417** (evenings and weekends) for more details on these, or any other positions in the North West.

Alternatively, write with brief career details (no stamp required) to Lorien Computer Services Ltd., FREEPOST, Leeds LS7 3YY.

LORIEN COMPUTER SERVICES
OCS House, Servia Road, Leeds LS7 1NJ
Telephone 0532 444185
Recruitment Consultants (24 hour Ansaphone service)

MERSEYSIDE

Our client is seeking a number of DP professionals, at a variety of levels, to cover major developments utilising the latest IBM technology, including 8100 SNA architecture systems.

SYSTEMS ANALYSTS TO £6,400 + BONUS

Analysts with sound commercial or manufacturing experience are required to work on large on-line systems. These include Materials and Production Control, Financial, Marketing and Works Operations applications.

ANALYST/PROGRAMMERS TO £6,400 + BONUS

Candidates should have gained good COBOL experience ideally, but not essentially, on large IBM hardware, together with some systems involvement. DL1, CICS and Distributed Processing experience can readily be gained.

PROGRAMMERS TO £5,650 + BONUS

Attractive vacancies exist for a number of ambitious programmers who should have a minimum of 18 months' experience which need not be on IBM hardware.

BENEFITS

In addition to a very attractive salary package, our client offers outstanding benefits including a subsidised canteen, concessionary rates on company goods, pension scheme, Flexitime and paid overtime.

CONTINUOUS TECHNICAL AND PERSONAL DEVELOPMENT TRAINING IS GIVEN AT ALL LEVELS.

To find out more about these challenging opportunities in a truly professional, progressive environment, contact:–

STEVE SYKES on **LEEDS (0532) 444185** (daytime) or **LEEDS (0532) 662417** (evenings and weekends), or write with career details to our Leeds office quoting reference 2CW. We are happy to talk to you at any time.

LORIEN COMPUTER SERVICES
OCS House, Servia Road, Leeds LS7 1NJ
Telephone 0532 444185
Recruitment Consultants (24 hour Ansaphone service)

PLYMOUTH CITY COUNCIL

SYSTEMS ANALYST/ PROGRAMMER
Grade: AP.4/5 £4644-£5547

Applications are invited from suitably qualified men and women for the above post in the City Treasury.

Applicants should have at least two years' programming experience with PL/1, including the use of structured programming and program design language, and also have experience as a Systems Analyst.

The installation comprises an IBM 370/138 operating under DOS/VS, with local and remote terminals using CICS/VS, and on-line programming using SPMOL.

Service is provided for the City Council and four other district councils.

Job description and application form, returnable by Friday, August 31, 1979, are available from City Treasurer, Guildhall, Plymouth, PL1 2AA.

---

oxford polytechnic

Computer Centre

COMPUTER SHIFT LEADER

Applications are invited for the post of Shift Leader. The successful applicant will be required to lead a team of Operators responsible for the Centre's computers. Equipment currently installed consists of ICL 1903T, running under GEORGE 2 and MAXIMOP. Additionally it is expected a dual-processor Prime computer system running PRIMENET and supporting 64 terminals will be installed later this year.

Applicants should be educated to 'A' level standard, and have experience of operating in a medium to large computer installation. A two-shift system is worked, and the salary will be within the T3 scale, £3420-£3834 plus £312, an additional 14% shift bonus is also payable, (Subject to review from July, 1 1979.

Further information and application forms may be obtained from The Deputy Administrator, Oxford Polytechnic, Oxford, OX3 0BP.

GSI Systems

ARE YOU LOOKING FOR CAREER GROWTH AND A CHALLENGE?

GSI, the largest computer services company in Europe, is offering that to

CREATIVE SYSTEMS AND SOFTWARE PROFESSIONALS working in LONDON, PARIS and MUNICH

Our growing software and systems division undertakes varied and technically challenging assignments. You will be working with management so you will need eloquence, confidence and initiative. Needless to say, spoken French and German would be useful (English is mandatory). The work will include:

SYSTEMS CONSULTATION
PROJECT EVALUATION AND AUDIT
PROJECT PLANNING AND MANAGEMENT
SYSTEMS SOFTWARE ARCHITECTURE
SOFTWARE PROGRAMMING

oriented to basic software, networking and sophisticated applications for mainframes, minis and micros.

Although it is unlikely that those with less than five years' experience will meet our requirements, if you think you are the exception that proves the rule, let us know. Please write, including résumé, salary history and location preference, to:

G. R. S. Bingham—GSI Systems
83 Clerkenwell Road, London, EC1R 5HP.
Tel: 01-242 0747

Générale de Service Informatique (UK) Limited is an equal opportunity employer.

CMG & International Banking
Consultants, Analysts & Programmers

CMG, Western Europe's leading independent computer service company is growing at a tremendous rate and within the Group one of the fastest expanding subsidiaries is the Services for Banks Division.

To take us into the 80's we are looking for D.P. personnel with at least 2-3 years experience of financial applications, preferably in banking, to work on and use advanced data processing techniques and expand their knowledge of International Banking. For the more senior positions the ability to develop new systems for banks is important plus experience of giving advice on the most appropriate solutions to their data processing problems – right through to installation.

Our commitment to growth means we are rapidly producing opportunities for promotion and as we always promote from within there couldn't be a better time for you to further your career. It also means CMG will pay the best salaries for the best people.

In addition to a varied working environment where everyone is regarded, as much as possible, as their "own boss" and there is the opportunity to have a say in the decision making process, we offer these unrivalled benefits.

- ✳ **Highest salaries**
- ✳ **Profit share**
- ✳ **Free BUPA, Pension and Life Assurance**
- ✳ **Share purchase scheme**
- ✳ **Assistance with relocation expenses.**

For further details please contact:-

David Hewitt,
CMG (Computer Services for Banks) Limited,
Roman House, Wood Street, London EC2Y 5BA.
Telephone: 01-638 3791.
or send this coupon to him as soon as possible.

Please send me — An application form. ☐
CMG1978/79 Report. ☐

Name _____
Address _____
_____
Telephone _____ Quote Ref. B/2

CMG
Computer Solutions for Business

OCC

OCC Computer Personnel Limited, 16 Bedford Row, London WC1R 4EB

To apply for any of the jobs below, or for further information, please telephone the consultant concerned during working hours on 01-242 9356 or write to the above address. If it would be more convenient to telephone in the evening, or at weekends, the telephone numbers are: Sarah Hurn - 01-673 0205, Fran Setter/Renée Nute - 01-874 6372

To £8,000 car allowance

An international computer manufacturer has successfully launched a range of small business computers. A systems programmer is required to work in the Systems Support Team. The work involves the generation and support of European versions of the Operating System including compilers and communications and also the development of special systems programs. Two years operating systems experience and Assembler level programming are essential. It would be advantageous to have Intel 8080, PLM Communications and RPG experience. This position would suit a senior programmer who wishes to remain in a technical environment and who would be interested in occasional European travel. An excellent benefit package is also offered.
Ref: 171/CW/Fran Setter

to £7,000

Our clients are an established multinational company with subsidiaries in the UK and Europe. They are known as specialists in conversion systems although some of their computer projects are in other areas. We are looking for a programmer with a very good technical background and a knowledge of COBOL on any mainframe to join a team, based in Surrey. The successful candidates will have the opportunity to gain experience on all major mainframes. In addition to first class conditions and financial rewards, there is the opportunity to travel in the UK and Europe.
Ref: 173/CW/Renée Nute or Fran Setter.

Systems Analysts (Customer Support) London E.C.1 base

c£8,000 package

Due to the success of their small business computer, an international computer manufacturer is expanding its marketing operations in London. Systems Analysts are required to complete the team and to provide support for this new product by way of pre-sales investigation, presentations and recommendations of appropriate commercial application packages together with responsibility for implementation and installation. Applicants should have experience of design through to implementation of commercial applications, preferably in a mini environment with either a User or a manufacturer. Excellent career prospects and benefits package are offered.
Ref: 171/CW/Fran Setter.

Senior Analyst Programmer Financial Systems

c£9,000

An international company based in London is looking for an experienced Analyst/Programmer to join a team redeveloping their internal financial systems. These include machine accounting, invoicing, purchasing and management accounts, using sophisticated techniques for batch and interactive access. They provide a bureau service on large IBM and CDC mainframes, and the successful candidate would be expected to be able to move on to the bureau side when the internal project was completed. The ideal person will have developed and designed financial systems, but if he or she shows sufficiently high potential, this is not a drawback. Communications and interactive skills are equally important, as the candidate will be expected to work closely with all levels of management. Benefits include an incentive bonus and profit sharing scheme.
Ref: 480/CW/Sarah Hurn.

Members of Computing Services Association

D.P.M.	**ESSEX**	**to £12,500**
Manufacturing Company using an IBM 370 and installing IBM 4300 series. Must be experienced in Systems Analysis, Cobol and knowledge of Operations an asset. (Bill)		
JUNIOR ANALYSTS	**LONDON**	**to £7,250**
6 months plus experience of Systems Analysis. (Peter)		
COBOL PROGRAMMERS	**N. SUSSEX**	**to £5,500**
Any Cobol. Learn Real Time and Database. (David)		
DATA CONTROL SUPERVISOR	**CITY**	**to £8,500**
To handle Customer Accounts for a Major Bureau. (Bill)		
SOFTWARE	**LONDON & W. LONDON**	**to £9,000**
Software experience with background in Commercial, Software or Engineering. (Peter)		
RPG 11 PROGRAMMER	**N.W. LONDON**	**to £6,000**
Good opportunity at new Sytem 3 installation. (David)		
SALES	**ALL AREAS**	**to £18,000 + car**
All types of sales positions available for people with a good Track Record. (Bill)		
TRAINEE ANALYSTS	**N. LONDON**	**to £6,800**
Experienced Programmers or Programmer/Analysts will be trained. (Peter)		
SYSTEM ANALYSTS	**MOST AREAS**	**to £8,500**
Good Commercial Systems experience. Let us cover the market for you. (David)		

TELEPHONE 01-839 6087
Bill Taylor, Peter Barson, David Ward
BARSON, TAYLOR & WARD
107 Jermyn St., London, S.W.1

BARSON TAYLOR & WARD LTD

World-Wide need......

A SYSTEM MANAGER

To help develop a processing system for our new Texas Instruments 990/10 Model 8 computer.

ARE YOU ....

- An ambitious programmer/analyst?
- In your twenties?
- Experienced in COBOL and RPG11, preferably in life insurance?
- Interested in working for a small but rapidly expanding company?
- Keen to make occasional trips to California?
- Like the sound of a package which includes mortgage assistance and company car?

Scored 5 or more? Then contact John Flowers at World-Wide Assurance Co. Ltd., Royal Albert House, Windsor, Berkshire SL4 1BE Telephone Windsor 55126

CONSULTANCY ASSIGNMENTS

★ IN LONDON & PETERBOROUGH

Contract or permanent positions with us for the following early start 6-12 months' assignments.

NORTH & WEST LONDON

Real Time Systems Designers with mini computer/CORAL experience.
Analyst/Programmer with 1900 COBOL/FILE TAB
Experienced Programmers with any COBOL
Experienced Programmers with VENTEK/DATASHARE

PETERBOROUGH

Systems Analysts with IBM background
Senior Programmers with IBM COBOL/DOS/CICS

Contact: I. Gold or R. Carr on 01-388 0036
Fraser Williams (London) Ltd.
38 Warren Street, London, W1F 5PD

Fraser Williams Computer Consultants

SMR Sales & Marketing Recruiters Ltd
Telex: 299244

SALES EXECUTIVES

The most difficult thing in the world is to be objective about yourself. This is particularly relevant when considering a new job. It is hard to know what the alternatives are in the context of your existing experience and capabilities, possible career developments and potential employers, whether you are presently or potentially a salesman.

We are the only company in the Computer Industry providing sales training, market research, product promotion and sales recruitment services. We understand the problems. We are aware of the opportunities. We are the experts. MR. TRADER SAYS SO! (With apologies to Rickenbecker.

Contact us anytime.

Tel: 01-734 9776
A Sales and Marketing Services Company
TRAINING, PROMOTION, RESEARCH, RECRUITMENT

YOUR PLACE TO WORK IS MUNICH
TELEDAT DATENVERARBEITUNGS GMBH

We are a rapidly expanding company, which is active in DP-Consulting and Software Development.

For the realization of long-term DP Projects we are looking for:

SYSTEM PROGRAMMERS
SENIOR PROGRAMMERS

You should have experience in IBM/OS and IMS DB/DC. The applicants should also be open minded, enthusiastic and enjoy working in a term.

Through the interesting development work you will always be on a high DP level and get an attractive salary.

We will also help you to find accommodation.

Letters of application should be sent to:

Mr. Lothar Bruchner
c/o 9 Farmway
Southwick
Sussex, BN4 4NU
(contact him from August 26-August 29, 1979; Tel: 0273 411393) or directly to:
TELEDAT DATENVERARBEITUNGS GMBH
Goldachweg 4
8011 Kirchheim/Munich
Germany
Tel: 010-89 9035213

Contract Requirements

PL/1

IMMEDIATE REQUIREMENTS: DOS & OS
LONDON - KENT - PETERBOROUGH - HANTS
Call Richard or Suzy on 01-491 4706

Knight — Staff Services Division of BOC Datasolve and a member of Computer Services Association

UNIVERSITY OF BIRMINGHAM THE COMPUTER CENTRE

The Centre already provides a wide range of local and remote computing facilities to the University. These are now being further extended by the installation of a DEC 2050 interactive system for both teaching and research and by the development of an internal network which will have links into the Midland Universities Computing Network.

To help support these extended services applications are invited from graduates for the following posts.—

1. COMPUTER OFFICER Operations Group

to assist with the management of the DEC 20 installation, to provide technical hardware and software support in the area of telecommunications and overall involvement in the selection, design and construction of specialised hardware.

Candidates should have management ability and several years proven experience in the design of digital or telecommunications systems.

2. SENIOR HARDWARE ENGINEER Operations Group

to be responsible for the day to day running of the technical workshop and the construction and maintenance of equipment associated with the network.

Candidates should have practical experience of telecommunications within a computer environment.

3. ADVISER FOR INTERACTIVE COMPUTING

This new Computer Officer post has been created in the User Services Group to develop the practical application of

★ *CAI and CAL techniques* ★

The post is tenable for two years: secondment would be welcome. Candidates should have computing experience especially in the areas of simulation and modelling techniques using on-line graphical displays.

For the Computer Officer posts, a higher degree is desirable but in all cases clear evidence of previous work successfully completed is essential.

STARTING SALARY FOR COMPUTER OFFICERS, ACCORDING TO AGE, QUALIFICATIONS AND EXPERIENCE, WILL BE ON THE SCALE:
£3775-£6355 (bar)-£7521 (from 1.10.79)
AND FOR THE SENIOR HARDWARE ENGINEER ON THE OTHER RELATED 1A SCALE. £4333-£7521 (from 1.10.79).

Further particulars are available from the Assistant Registrar, Science and Engineering, University of Birmingham, P.O. Box 363, Birmingham B15 2TT, to whom applications (3 copies) including curriculum vitae and naming three referees should be sent by 21 September, 1979.
Please quote reference: CZ1.

WESSEX REGIONAL HEALTH AUTHORITY

1900 Systems/Programming

Applications are invited from suitably experienced Analyst Programmers to fill a number of vacancies at our Computer Centre based at Winnall, Winchester. Experience of COBOL, ICL 1900 and 2903 Computers, George 3 and NCL standards will be taken into consideration when appointing to the following grades:

1. Senior Systems Analyst/Programmer

(Scale 9). Salary £5,653 rising to £6,869
Increase from 1.1.80 to £6,258 rising to £7,685

2. Programmer

(Scale 4)
Salary £5,092 rising to £6,072
Increase from 1.1.80 to £5,637 rising to £6,749

The computing services for the entire Wessex Region are directly managed by the Authority and provide a service for all four Area Health Authorities in the Region covering Hampshire, Dorset, Wiltshire and the Isle of Wight. Work is carried out on the following areas — Financial, Administrative, Manpower, Medical Hospital and other distributed systems.

There is a network of District based ICL 2903 computers and 7502 terminal systems linked into the main computer, a 1903T running under George 3.

Further details and application forms are available from the Personnel Department, Wessex Regional Health Authority, Highcroft, Romsey Road, Winchester, Hants. Tel. (0962) 63511, Ext. 350.

Closing date: 31st August, 1979.

Contract Requirements

UK

IBM OS ASSEMBLER	— MIDDX
IBM COBOL + ASSEMBLER	— SURREY
IBM OS COBOL + IMS	— KENT
ICL 2900 ANALYST/PROGS	— LONDON
ICL COBOL SFL	
TECH WRITERS	— WILTS
HONEYWELL COBOL + IDS	— N. LONDON
HEWLETT PACKARD COBOL	— WARWICKS

Call Richard or Suzy on 01-491 4706

Knight Software Division
Staff Services Division of BOC Datasolve and a Member of Computer Services Association

OCC

OCC Computer Personnel Limited, 16 Bedford Row, London WC1R 4EB

To apply for any of the jobs below, or for further information, please telephone the consultant concerned during working hours on 01-242 9356 or write to the above address. If it would be more convenient to telephone in the evening, or at weekends, the telephone numbers are: Renée Nute/Fran Setter - 01-874 6372 Sarah Hurn - 01-673 0205

£6,000 to £8,500 + Profit Share

- 3 to 4 years experience
- Experience in COBOL or PL1
- Greater London area

A very successful software consultancy wishes to recruit Programmers for work on a large range of commercial projects. These are carried out on client installations throughout London and the S.E., so candidates must be prepared to travel for which expenses will be paid. Teams will work on a variety of systems ranging from small batch projects, to large on-line database systems offering a great opportunity to broaden and diversify your experience.
Ref: 399/CW/Sarah Hurn.

Programmer/Analyst

£6,000 - £7,000 W. London

This is an excellent opportunity to join a new Software Application Group set up by a major computer manufacturer to provide service to clients. Candidates should have a good commercial background on minis, preferably in COBOL or ASSEMBLER. Alternatively communications experience on minis would be useful. Promotion prospects to Systems Analyst are very good.
Ref: 173/CW/Fran Setter.

£7,000 - £10,000

A London based Project Manager position calls for the following background:
- 5 years experience including 2 years systems analysis.
- Some degree of responsibility within a project environment and the potential to become a junior project manager. OR previous achievements as a project manager.
- A knowledge of ICL equipment would be useful but is not essential.

This is a first class opportunity to join an established software house, steadily expanding in the U.K. and abroad.
Ref: 514/CW/Renée Nute.

Cheltenham – A manufacturer specialising in computerised photo-typesetting requires development programmers for writing and testing programs. Must have at least one year's Assembler programming experience on mini or Micro Real Time Systems. Salary up to £6,000.
Ref: 200/CW/Anna Senior

Herts – Development Programmers are required by a computer manufacturer to work on the system software for a multi-processor. Key to Disk and distributed processing system. Candidates should have experience of system design and implementation. Salary £4,500-£8,000.
Ref: 201/CW/Karen Rizzello.

Reading – Graduate programmer required for the Military Systems Unit of a Software House. The successful candidate will have a minimum of 2 years Real Time programming experience (preferably Assembler) on minis. Salary c£5,000.
Ref: 202/CW/Anna Senior.

Surrey – Due to expansion the Management Services Department of a large electronics group requires Programmers. Candidates should have 3-4 years commercial COBOL experience on an ICL 1900 ideally using G3. Salary £5,600-£6,600.
Ref: 203/CW/Karen Rizzello.

Members of Computing Services Association

THE ST. HELEN'S COLLEGE OF TECHNOLOGY
SCHOOL OF MANAGEMENT STUDIES

LECTURER II/SENIOR LECTURER IN SYSTEMS ANALYSIS AND COMPUTER STUDIES

The School of Management Studies (part of the North West Regional Management Centre) has a well-established reputation both regionally and nationally in the fields of post-graduate and post-experience management education.

The person appointed will work with a group of staff from several quantitive disciplines teaching on a range of specialist short courses, in particular the N.C.C. Basic Systems Analysis Course. He/she will also contribute to all appropriate management studies courses within the School.

Candidates, who will be graduates, must have up-to-date knowledge of computer based information systems and hold or have recently held a position in Systems Analysis. Teaching experience would be an advantage.

SALARY: £4470-£8253 (Starting point dependent on age and experience).

Application forms and further particulars are available from the Principal's Office, The St. Helen's College of Technology, Water Street, ST. HELEN'S, Merseyside WA10 1PZ, and should be completed and returned within twenty-one days of the appearance of this advertisement. Please quote Ref. No. 1/CW.

WE HAVE THE BEST PRODUCT

We have some of the best people—but we need more.

In-house Engineers	£5000–£7000
Service Engineers	£5000–£7000
Analysts	£6500–£9000
Programmers	£5500–£8000

Together with company benefits.

Engineers: Contact David Gardiner
Programmers and Analysts:
Contact Trevor Boyce

ALPHA MICROSYSTEMS UK LTD
(01) 930 1991

International Management & Personnel Consultants to High Technology

ENGINEERS

SUNSHINE + £12,000 P.A. TAX FREE + FREE ACCOMMODATION + FREE FLIGHTS HOME + CHILDREN'S EDUCATION

Living and working in Kuwait, probably the most westernised Middle East State.

If you are a professional Computer Engineer, with 3-5 years' hardware experience, preferably with some exposure to Burroughs B80-800 equipment, the above opportunity could be yours following a call to our London Office quoting Reference JM/20.

IMPC LTD.
72-75 Marylebone High Street
London W1M 4AJ.
Telephone 01-486 5644

I.M.P.C. (NORTHERN) LIMITED.
Austin House. Charlotte Street.
Manchester.
Telephone 061 236 7026/7/8

I M P C (IRELAND) LIMITED
20 Upper Fitzwilliam Street. Dublin 2
Telephone 0001 7663 87
0001 7665 43

INSIGHT MARKETING & PERSONNEL CONSULTANTS LTD.
72-75 MARYLEBONE HIGH STREET LONDON W1M 4AJ.

THORBAR

(RECRUITMENT AND CONSULTANCY SERVICES) LIMITED

Greenock House 19 Cuckfield Road Hurstpierpoint Sussex BN6 9RF

Telephone: Hurstpierpoint (0273) 833848

SPECIALISTS IN DP AND EXECUTIVE RECRUITMENT

REF: CW/15/79

COMMUNICATIONS
(CENTRAL LONDON BASED)

PROGRAMMERS (OPPORTUNITY FOR TRAVELLING IN EUROPE)

MOVE INTO THE REAL WORLD OF D.P. DEVELOPMENT FOR THE 1980's & WORK WITH SOME OF THE LARGEST DATA COMMUNICATIONS NETWORKS WORLD WIDE

SALARY c.£10,000 + FRINGE BENEFITS

DATA COMMUNICATIONS — DISTRIBUTED PROCESSING

This is your chance to develop and enhance your Programming skills working for a leading International client, utilising the most advanced levels of D.P. Technology within the Distributed Processing Field.

To qualify for one of these outstanding opportunities, we would expect you to:

1. Possess first-class programming skills gained from working in environments incorporating Data Communications and/or Distributed Processing Systems.
2. Typically, but no necessarily, portray a high level of academic achievement, ideally supported by a degree in one of the numerate subjects.
3. Present an attractive personality profile coupled with the ability to work well with all levels of user and management personnel.
4. Prove that you are able to take a high level of responsibility supported by evidence of your success in working on software projects through to implementation.

MAKE YOUR MOVE NOW AND CONTACT US EITHER BY TELEPHONE (24-HR ANSWERING SERVICE) OR BY LETTER TO MAKE IMMEDIATE ARRANGEMENTS FOR US TO MEET IN LONDON OR THE SOUTH. BY DOING SO YOU WILL HAVE TAKEN A VERY IMPORTANT STEP TOWARDS FURTHERING YOUR CAREER.

Controller (Designate) of Computer Services

Solihull — up to £10,683*

West Midlands Gas invite applications for the above post which is based at their Regional Headquarters, Solihull.
The man or woman appointed will be responsible to the Deputy Chairman for the management of the Computer Services Department, involving Systems Design and Programming, Computer Processing, and Data Preparation and Control.
The installation currently comprises an I.C.L. 2972 and two I.C.L. 2960's. The latest ancillary and peripheral equipment is in use and there are at present some 450 V.D.U's throughout the Region.
Applicants should have an appropriate degree and/or a professional qualification, together with management experience at a senior level. Close co-operation with, and an understanding of the needs of, user departments is of particular importance.
*Salary up to £10,683 p.a. (under review) plus current self financing productivity payment and the benefits normally associated with a large progressive organisation including re-location assistance where appropriate.
Applications giving full personal particulars and career details should be sent to:- Director of Personnel, West Midlands Gas, Wharf Lane, Solihull, West Midlands B91 2JP.
Closing date for applications August 30 1979.

WEST MIDLANDS GAS

SERVICE ENGINEER — **Abu Dhabi, U.A.E.**

Applicants must be fully trained and capable people, able and prepared to work without close supervision. Sound practical and fault diagnosis experience in electronics is necessary, and preference will be given to candidates with direct knowledge of Compugraphic phototypesetting equipment. Experience with Linotype, A-M, Harris and Monotype will also be considered.

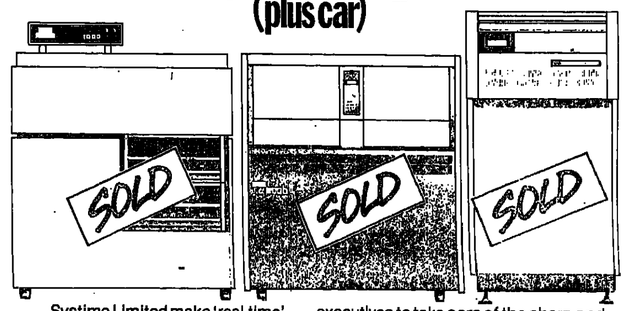
A mature, diplomatic attitude is essential to build client confidence. General efficiency and sales awareness to maintain service profitability could be rewarded with promotion.

Attractive salary, tax free in U.A.E., free flat and car, medical scheme, 30 days annual holiday including paid travelling.

Please mail application together with references and a recent photograph to:

Compugraphic Europe et Cie
Tour Neptune, Cédex 20, 92086 Paris-La Défense, FRANCE Tel. (1) 778.16.25

Selling computers that sell themselves could earn YOU £16,000p.a.
(plus car)



Systime Limited make 'real-time' mini computers—the ones that are now revolutionising office and business systems.

The company started up just seven years ago. Today it employs getting on for 750 people worldwide. And the computer industry, as you know, **isn't** very labour intensive!

But even though demand is higher than it's ever been—and is increasing madly—we still have to sell our wares in a competitive environment and need motivated, experienced sales executives to take care of the sharp end of the operation.

The People

Ideally the people we require will already have experience selling computers but we would also like to hear from those with sound experience selling the more sophisticated lines of office equipment.

The Location

Based in one of our main regional centres—London, Leeds, Manchester, Bristol, Northampton and Nottingham.

For details write or phone Ron Napier at:
Systime Limited, Concourse Computer Centre, 432 Dewsbury Road, Leeds LS11 7DF
Tel: (0532) 707411

BIRMINGHAM, BRISTOL, LONDON, MANCHESTER, NORTHAMPTON, NOTTINGHAM, BELFAST

Making Computers make sense.

DUBLIN, ABERDEEN, GLASGOW, FRANCE, HOLLAND, INDIA

SYSTIME

Have you considered

working in Europe?

If you have a good IBM 370 background in Systems Programming, or TP/DB Applications Development, why not contact CDS to find out more about Working in Europe. We especially want to hear from applicants for these current project needs:

SENIOR SYSTEMS PROGRAMMER-VS1

to undertake a consultancy project at a Dutch client on a six-month renewable contract basis. Responsibilities will cover all aspects of VS1 software support plus the training and development of 2 junior staff. Applicants should be fully conversant with BAL and have several years' OS/VS1 experience: DB/DC knowledge is also important since non-IBM database and TP systems are in use. You will be able to exercise your supervisory skills and your technical expertise during this assignment, whilst achieving excellent earnings.

For further details contact Jim Shaw at CDS, or on 0990 24546 evenings/weekends.

TOP EUROPEAN EARNINGS

CDS EUROPEAN ASSIGNMENTS

2 The Courtyard, Denmark Street, Wokingham, Berks. RG11 2BB. Tel: (0734) 791225. Telex: 847317

For details of forthcoming Features in the North and Scotland

Northern Recruitment Feature, September 27th

Scottish Recruitment Feature, October 25th

Contact Owen Kelly on 061-832 4211

£10k+Appointments £10k+Appointments £10k+Appointments

International Management & Personnel Consultants to High Technology

SALES MANAGER — LONDON AREA

c 13k p.a. plus car

Our Clients are a multi-million international organisation who have substantially increased their share of the market during 1978/79. Recent promotions within the Company have created a need for a Sales Manager, who would see this step as firmly placing him on the Management ladder.

The Company has an exceptional product range, with one of the largest user bases in Europe. The introduction of an advanced range of 'real-time' Mini-Computer Systems, with equally advanced software, will further substantially increase demand for their products.

Candidates will need to be professional, successful salesmen who have gained experience of managing a team of Salesmen within the Mini-Computer/Business System Industry. Age is relatively unimportant, but will probably appeal to someone within the 28-35 age bracket. The successful candidate can look forward to a proven high income, plus the opportunity of further promotion. Please telephone for an appointment to the London Office quoting ref. number DVW/SM1

SALESMEN — UK WEST — LONDON AND NORTH

Income c 13k p.a. plus car, etc.

HOW OFTEN HAVE YOU BEEN LET DOWN BY YOUR SALES SUPPORT?

We are all aware that one Mini-Computer is very much like another. What sets them apart is the level of Software and Support. Our client's new and advanced range of real-time minis, has an advanced and fully developed range of software supported by one of the largest Support teams in the UK.

The product has already created a great deal of interest, thus the need for additional Salesmen and future Sales Managers.

Successful candidates can expect very high incomes plus an exceptional opportunity for early management.

If you have successfully sold Mini-Computers, and wish to earn a high income and are looking for a real career, please telephone: London office for UK West and London and Manchester office for the North, quoting reference number DVW/S2

IMPC LTD
72-75 Marylebone High Street
London W1M 4AJ
Telephone 01-486 5644

IMPC (NORTHERN) LIMITED
Austin House, Charlotte Street
Manchester
Telephone [illegible]

IMPC (IRELAND) LIMITED
20 Upper Fitzwilliam Street, Dublin 2
Telephone [illegible]

INSIGHT MARKETING & PERSONNEL CONSULTANTS LTD.
72-75 MARYLEBONE HIGH STREET LONDON W1M 4AJ.

JOIN US IN APPLIED SYSTEMS AND SOFTWARE ENGINEERING TECHNOLOGY

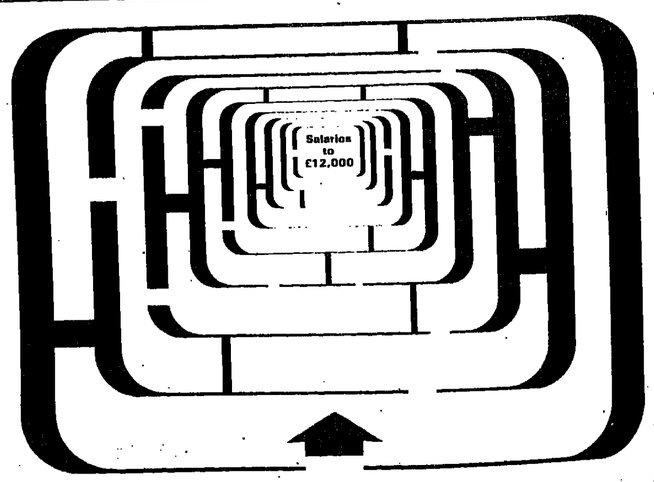
Systems Designers Limited needs computer professionals to join a select group of consultants devoted to enhancing quality and productivity through the development and application of methods standards and development tools for all phases of system and software development and production. Applications include DP, aerospace, communications, command and control, simulators, military, process control.

Continuing demand for consultancy services in the UK and Europe has led to the need for further staff to contribute to the development, and application on behalf of clients, of
Methods — for Requirement Specification and Design
Standards — for the complete project life cycle
Tools — Specification Language Systems

Applicants are expected to have had at least five years' experience in Real Time Computing Systems, preferably working in multi-discipline teams.

If you think that you have the right outlook and ambition to work in this challenging environment, please telephone Ann Gregory for an application form and further information about the company, or write to: Bill Hackey, Operations Director, Systems Designers Limited, 1 Pembroke Broadway, Camberley, Surrey GU15 3XH. Telephone Camberley (0276) 62244.

SYSTEMS DESIGNERS LIMITED



Professional problem solvers start here.

With Systems Designers

Tesco Management Services Limited is a newly formed Computer Services Company, a wholly owned subsidiary of Tesco Stores (Holdings) Limited.

We are a small Company but with ambitious plans for growth and we have access to the latest IBM hardware and software including the 4300 series as well as large mainframes running under MVS. Our current vacancies are for:

TECHNICAL SPECIALISTS (Circa £10,000 + Car)

With considerable experience of at least one IBM operating system and a good knowledge of COBOL, Assembler and OS or DOS JCL. You should have good communicative skills and a high degree of professionalism, and have demonstrated that you can cope in a variety of different environments.

You must be ambitious and be prepared to work as part of a small but highly motivated team. The positions are based at Cheshunt but you must be prepared to work away from home as required.

SENIOR PROGRAMMERS AND PROGRAMMERS up to £7,500 pa (dependent upon experience)

You should have solid IBM COBOL and JCL experience and a knowledge of Assembler or 1900 COBOL would also be an advantage although not essential.

You will be working in a small team environment but you will be using TSO as your main program development tool and will be working on a variety of systems for different Clients.

The positions are based in Cheshunt but there may be opportunities for working on site at Customer Installations in the future.

For the more Senior positions you should have an awareness of the skills required to manage and motivate people.

Re-location expenses will be paid where appropriate. For an application form write to Ian Bell, Executive Director, Tesco Management Services Limited, New Tesco House, Delamare Road, Cheshunt, Herts, EN8 9SL or telephone him on Waltham Cross 32222 Ext. 3469 to discuss the positions further.

Tesco Management Services Ltd

PROGRAMMERS

Train to be a Systems Analyst

WHILE YOU WORK

Our clients, a newly-formed Computer Services subsidiary of a major group based in Edinburgh are in the process of developing a training schedule for qualified programming staff.

The benefits of planned training and career development are considerable. As well as gaining valuable on-the-job experience, candidates can expect a thorough grounding in systems techniques and progress into the systems area.

Candidates should have gained at least twelve months' programming experience in a commercial environment. Salaries are negotiable and company benefits include a mortgage subsidy scheme, profit sharing and preferential personal loans after a qualified period. Relocation assistance may be available if necessary.

Telephone Philip Bliss on 031-226 6674 for further information or write enclosing a detailed C.V. and quoting Ref: CP/31/E, to:

DML Computer Personnel Service
11 Charlotte Square
Edinburgh EH2 4DR

Location interviews will be carried out in major centres throughout the U.K.

DML

CAREERS IN SCIENTIFIC COMPUTING AND ELECTRONIC ENGINEERING

Challenging opportunities to work on:

MICROPROCESSORS NETWORKS REAL TIME PROGRAMMING LOGIC DESIGN

Daresbury Laboratory is developing major national facilities in the fields of computer networking, atomic, molecular and biological sciences and nuclear physics. The exploitation of these facilities requires first-class computing support. Computers at the laboratory include an IBM 370/165, GEC 4070 PDP-11s and Interdatas.

COMPUTER NETWORKS
Development and support of communications software for interactive terminal, graphics and remote job entry access to the SRC's computing centres using microprocessor based communications hardware and mini-computer pocket switches and front end processors.

DATA ACQUISITION
Programmes are required for the development of data acquisition systems using LSI and PDP-11 computers connected to an IBM 370/165. There are opportunities to work with large and small systems in a stimulating scientific environment. Relevant programming experience would be an advantage but is not essential.

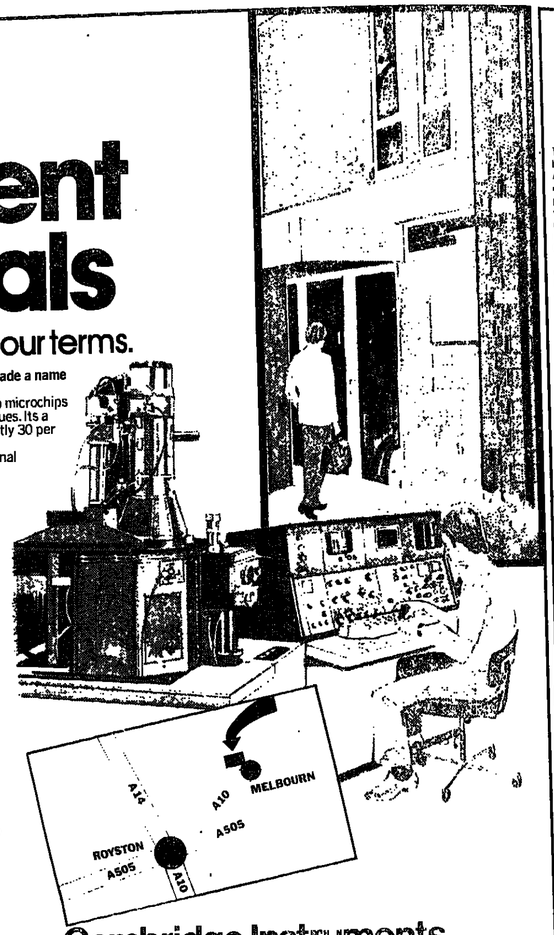
LOGIC DESIGN
Interface design for mini-computers using the latest microprocessor techniques, also communications interfacing to remote data processing. Specialised design of data acquisition systems.

Applicants, of either sex, should have a good honours degree in a relevant scientific discipline. Appointments will be made depending on qualifications and experience at SO level.
Scientific Officer £3,289 - £5,086 (salaries are currently under review)
Closing date: 7 September 1979
Please write or telephone: Warrington 66000 Ext. 467, for an application form quoting reference DL/694/

The Personnel Officer
DARESBURY LABORATORY
Science Research Council
Daresbury, Warrington WA4 4AD

Software Development Professionals

Come up to Cambridge and study our terms.



In electron beam microfabrication, we at Cambridge Instruments have already made a name for ourselves.

We lead the world in the design and manufacturing of systems which will develop microchips at least ten times smaller than is possible using established photosensitive techniques. Its a market predicted to expand annually by some 60 per cent and our growth is currently 30 per cent per annum.

Yet in numbers of people we are a very small company. To any software professional interested in making a name for themselves we have an exciting proposition.

We want to talk to the following:

Senior Project Programmer

Our need is for an experienced graduate who will help draft design studies, proposals and specifications for a variety of projects, co-ordinate development designs, conduct experiments, monitor schedules, document work and liaise with production and product support departments.

Occasional visits to customer sites will be necessary, and there will be regular contact with suppliers, external consultants and product support departments.

Project Programmer

In this position you will work closely with the senior project engineer assisting in all aspects of their work. It will be your additional responsibility to run certain sections of each project.

Experience in Assemblers and high level languages is relevant to our activities.

Most important of all is your technical ability and resiliant temperament. Ours is a high precision often high pressure environment and you should be willing and able to switch from one project to another, from development into production or product support as the need arises.

Our offer to you is as comprehensive as it is attractive. Firstly you will have one of the most stimulating development environments you will find in the micro-electronics.

Secondly, our location means that we can offer an attractive life style.

Thirdly, our company benefits are hard to beat. There are pension, life assurance and sickness schemes plus a heated outdoor swimming pool and tennis courts which your family can use. Our generous relocation scheme covers all relocation costs.

Finally, we offer unique career prospects for the future.

If we interest you, it will cost nothing to find out the full facts by arranging to talk frankly and professionally.

Contact us for an appointment by phoning: Mrs. M. Middlebrook on Royston (0763) 60611. Or write to her at: Cambridge Instruments, EBMF Division, Melbourn, Royston, Herts SG8 6EJ.

Cambridge Instruments

COMPUTER APPLICATIONS OFFICER

(Ref F 29)

Salary up to £6,945 (inclusive)

The successful candidate will be responsible to the Chief Administrative Officer for developing the use of the present computer terminal as well as developing the use of computer techniques within the Department. The Council's computer is an ICL 1903T 128K installation and is under the control of the Borough Treasurer. The person appointed will be based in the Architect's Department at Anerley Road SE20.

The successful candidate must have considerable experience with computer techniques and be able to write programmes dealing with technical subjects. Therefore, a qualification in the building industry would be desirable.

In approved cases, assistance will be given towards reasonable removal and resettlement expenses. Commencing salary depends upon age, qualifications and experience.

A 19-day, four week cycle of hours is in operation.

Closing date 31st August, 1979.

Application forms from Assistant Chief Executive (Manpower), Town Hall, Bromley BR1 1SB. Tel 01-464 3333 Ext 3318.

LONDON BOROUGH OF BROMLEY

CONTRACT/PERMANENT

£20K — £30K

IBM/OS/COBOL in USA

Ring Ian Cox 01-278 6426 (day) 01-272 2794 (eves/wkd)

CAPITAL APPT.

GRADUATES

Urgently required to fill positions industrial services/Commercial sources

SALARIES c. £3,000 ALL AREAS

637 5857 (day) 634 1651 (eve)

KINGSTON UPON THAMES

OPERATORS

(with experience of any large mainframe)

UP TO £5608

THE JOB OFFERS —

- Experience with the latest UNIVAC 1100 mainframe
- Operating with an expanding communications network
- Experience of a wide range of Operations' duties for Batch, Comms & Control work
- Two shift system with no regular weekend work (salary shown is inclusive of shift allowance).

The posts being offered are covered by a comprehensive career and salary progression scheme, together with good training facilities for management and technical skills.

OTHER BENEFITS

Wide range of relocation allowances, pleasant working environment, staff restaurants, free car parking, staff club facilities — Bar, discos, squash, tennis, golf, etc.

If you have at least 9 months' experience and are interested — phone or write (with details about yourself) to — **PETER BROWN, Computer Services Division, County Hall, Kingston Upon Thames. Tel: 01-546 1050, Ext. 3479.**

SURREY COUNTY COUNCIL **COMPUTER SERVICES**

International Oil Exploration and Production

PROGRAMMER

Unionoil Company of Great Britain, a subsidiary of Union Oil Company of California, wishes to engage a Programmer for the Computer Services Department at the Sunbury-on-Thames Head Office. This position, in a recently established department, offers a unique opportunity for professional challenge and scope.

Initial responsibilities include commercial programming for accounting and management information reporting systems.

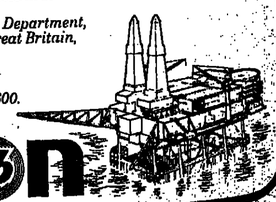
Candidates should have 'A' level qualifications and two to four years' experience with Cobol. Familiarity with Fortran or Basic would be an advantage.

This position offers an excellent salary and benefits package and interesting career opportunities with an international oil exploration and production company.

Additional benefits of this position will be the experience gained on our in-house computer, which currently controls an on-line and multiple site environment.

Interested persons should respond in writing to the address below. All responses will be held in strict confidence.

Administrative Services Department,
Unionoil Company of Great Britain,
32 Cadbury Road,
Sunbury-on-Thames,
Middlesex.
Telephone: Sunbury 85600.



union 76

ANALYST/ PROGRAMMER

London up to £6214

The Computer Services Department of British Gas (HQ) is looking for an Analyst/Programmer to join its Data Handling Section. This Section designs and develops information systems which straddle conventional definitions of technical and commercial application areas.

A varied programming environment is available based on Univac 1100/21, and ICL 2972 hardware. Conventional high level languages of COBOL and FORTRAN are extended by means of Codasyl (Univac DMS 1100, ICL IDMS) database and interactive Query languages to meet the needs of individual applications.

Applications are invited from candidates with a degree in a numerate subject together with practical experience of developing systems using FORTRAN or COBOL within a large operating system environment.

Starting salary will depend on qualifications and experience but will be within the range £5335 to £6214 (including Inner London Weighting). In addition to salaries quoted, there is currently a Self-Financing Productivity Payment.

For further details and an application form, contact the Research Secretary, British Gas, London Research Station, Michael Road, Fulham, London, SW6 2AD, quoting reference LRS/316.

BRITISH GAS

FORTRAN

ENGINEERING

SCIENTIFIC BACKGROUND

CONTACT US, THE SPECIALISTS IN THESE FIELDS

We urgently require Programmers with experience of Fortran, Assembler, Corol or Basic for Real-time Applications.

Jobs from £3,500 to £8,000 in all areas. Phone now for a free list of vacancies

Capital Appointments, 29-30 Windmill Street, London W1
Telephone: 01-637 6851 (day) — 01-636 5689 (eves.)

WALSALL METROPOLITAN BOROUGH
TREASURER'S DEPARTMENT
COMPUTER DIVISION

SYSTEMS ANALYST

(£5220-£6090)

The division is responsible for developing, operating and maintaining systems for all departments of the Authority. The mainframe equipment consists of an ICL 64K 1902T and Communications equipment. Data preparation is via a G.C.S. key to disc system; remote terminal equipment includes a 7502 system and 931 terminals linked to 1500 processors. The GEORGE 2 operating system is used together with COMMS. MANAGER and DRIVER for the real-time applications. The programming languages used are COBOL and PLAN.

Application forms from the Treasurer, Walsall Metropolitan Borough Council, Civic Centre, Walsall, WS1 1TW, or telephone Walsall 21244, Extension 2840. Closing date for applications is Thursday, 30th August, 1979.

HEAD OFFICE

TERMINALS SUPERVISOR

Salary: £3,867-£4,184 (+ £312 p.a. supplement) (Pay settlement imminent)

You will be required to act in a support role to divisions on all aspects of computer operations work and terminal operating. Considerable experience of ICL terminal equipment is required. The duties of the post will involve a certain amount of travelling for which a regular user car allowance will be payable.

Application forms from: The Director of Personnel & Management Services, North West Water, Dawson House, Great Sankey, Warrington, Cheshire WA5 3LW.

Tel: Penketh 4321, Ext. 64.

Closing date for applications: 24th August, 1979.

The above post is open to men and women.

North West Water

Open Evening

Watford, Greenford and West End

CMG's expansion continues and with it our need for experienced computer professionals looking to further their career with one of the most progressive companies around.

We'd be delighted to meet you at one of the addresses on the right. There you'll have the opportunity to meet some of our staff and managers and discuss the career development opportunities that we can offer, ranging from programming through to consultancy.

If you can't make it, please telephone or write, quoting ref. M/W1, to:

Norma Cozens at the Middlesex Office 01-578 4563 or

Iris Norman at the West End Office 01-222 3521

Just choose the venue nearest to you.

Caledonian Hotel, St. Albans Road, WATFORD.

CMG (Middlesex), Westway House, 320 Ruislip Road East, GREENFORD, Middx.

CMG (West End), Telford House, 14 Tothill St., LONDON SW1.

on Tuesday 21st, Wednesday 22nd August, 1979 between 1700 and 2000 hours.

Computing Services Association
Member of the Computing Services Association

CMG Computer Solutions for Business

GEORGE 3 SPECIALIST

Home Counties c. £8,000

Our client is the largest and most progressive ICL based bureau in Europe. Offering a complete range of computer based services with a nationwide communications network they are growing at the rate of 50% per year.

They are currently seeking to recruit a George 3 specialist who has the ability to provide the George 3 expertise for internal requirements who can also act as a consultant for both customers and prospects.

The successful applicant will have at least three years systems programming experience on I.C.L. equipment running under George 3. The work involves amending the existing operating system (re-coding of chapters etc.) to improve performance and provide new facilities. There will also be considerable opportunity to work on other large operating systems.

If you feel you have the necessary experience and wish to join a highly successful and professional bureau services company telephone or write quoting reference 2554. Mann Management, 124 New Bond Street, London W1. Tel: 01-409 1371.

MANN MANAGEMENT

SYSTEMS ANALYST

NW3 **to £7000**

Our clients, a national Transport organisation, whose Head Office is in Swiss Cottage, wish to recruit a SYSTEMS ANALYST with experience of IDS and TDS, to work on their HONEYWELL 66/40 installation running under GCOS.

The successful candidate will be of good educational standard and will have been involved in the design of at least one major on-line project. A programming background (ideally COBOL on Honeywell equipment) would be preferred.

The company is part of a very large corporation offering excellent career prospects to the right candidates.

CCC

Irish System Programmers
required by the successful Company with successful products in great demand.

We need enthusiastic junior and senior OS/VS System Programmers to join our Customer Support Team.

If you are interested in achieving high earnings and a professional challenge contact us immediately.

Extensive product training will be given in California, U.S.A. and at our European Offices.

Products include: SECURE - RESOLVE - TONE - CMF - CONTROL/IMS - CONTROL/CICS.

The European Software Company

5, Herbert Place - Dublin 2 - Ireland. Tel: 01-789969 - Tlx: 30440:

Offices: Dublin, Dusseldorf, Paris, London, Milan, The Hague.

Operations Training Officer

£6585-£6948
(Including London Weighting)

LOLA (London On-Line Local Authorities) provides computer facilities for a consortium of four large London Boroughs. The Computer Centre is situated in modern premises at Enfield and current equipment is a 4-megabyte IBM 370/158AP running IMS/VS and MVS.

An Operations Training Officer is required to ensure that new entrants to the Operations Sections, as well as existing staff, have suitable, planned training in the many and varied applications we process, as well as in our hardware and software.

Applicants should have extensive operating experience (including two years at a senior level) in a large IBM (preferably t.p.) environment, the ability to communicate effectively and the desire to pass on their knowledge to others. A good working knowledge of OS, JCL and Utilities is also required.

For further information or application forms please contact:

Alec O'Connor
LOLA
Tower Point North
Sydney Road
Enfield EN2 6UE
Tel: 01-366 6611 Ext. 290.

LOLA

Closing date for receipt of completed applications 31 August.

SCHREIBER

the leading manufacturer of domestic furniture in the U.K., has vacancies for

COMPUTER ANALYST AND PROGRAMMERS

at Harlow, Essex

Experience of COBOL on ICL 1900 or 2903/4/5 disc-based systems plus supervisory or production systems experience can lead to an attractive remuneration package giving up to £7,000 per annum.

The Company has an impressive group record based on seven manufacturing units.

Plans are in hand for an extensive hardware upgrade involving the installation of an ICL 2905 with communication links. This presents an opportunity for suitable candidates to share in the successful development of the Data Processing activity.

We offer a starting salary which will attract the most able and experienced applicants. Our range of Company benefits include a contributory pension scheme, life assurance, discounts on company products, assistance with relocation expenses and a profit-sharing scheme paid twice yearly.

Please write to:

Mike Staines, Personnel Manager
Schreiber Furniture Ltd.
Edinburgh Way
Harlow, Essex

COMPUTER ENGINEERS
U.K. all systems go O.S.

- FIELD/SITE/SUPPORT
- ALL SYSTEMS GO
- £8,000-£17,000
- + STAND BY
- + SHIFT
- + OVERTIME (According to post)
- + CAR OR ALLOWANCE

Stack Associates

RECRUITMENT CONSULTANTS, HODDESDON (09924) 62729

LANCHESTER POLYTECHNIC AT COVENTRY
FACULTY OF APPLIED SCIENCE
Department of Statistics and Operational Research

RESEARCH ASSISTANT
£5183-£6502 (Under Review)
(TENABLE FOR 1 YEAR)

THE JOB will require the person appointed to assist with research in one or more of the following areas: Statistical Computing, Demography, Applied Statistics, Physical Distribution

REQUIRED a newly-qualified graduate or research student, to be given the opportunity to gain experience of the Polytechnic sector of Higher Education.

For application forms and job specifications please apply by return, enclosing a self-addressed envelope to the Personnel Officer, Lanchester Polytechnic, Priory Street, Coventry, CV1 5FB, returnable by Monday, August 20, 1979.

Compeda
Computer Systems for Technology

APPLICATIONS SUPPORT ENGINEER INDUSTRIAL ENGINEERING SOFTWARE
c. £8,000

Compeda needs an individual, male or female, to join a team implementing new versions of our industrial engineering packages - AUTOMAT, NULISP and COMPUTE. There will be liaison with customers to solve particular problems and involvement in consultancy and training.

The basic qualifications include a technical degree and good FORTRAN experience. A relevant industrial background would be an advantage.

This post is based at our Headquarters in Stevenage. A bonus scheme is in operation and removal assistance is also available.

TECHNICAL SALES CONSULTANT CAD SYSTEMS FOR ELECTRONICS
c. £9,000 plus Company Car

Compeda needs additional men or women to join the team successfully selling and supporting our GAELIC system for analysis and design of VLSI. The system is already in use in Europe and the USA, as well as in the UK, and the new consultant will be responsible for customer liaison in the UK with some involvement in Europe.

The post is based at our Headquarters in Stevenage. A car will be provided and the remuneration package includes a results-related bonus scheme. Removal assistance is also available.

OPERATING SYSTEM CONSULTANT/ COMPUTER MANAGER
c. £9,000 subject to experience plus Company Car

Compeda now seeks an individual, male or female, to fill a new post concerned with the implementation of high technology computer aided design systems on various computers.

Most of our systems are written in transportable FORTRAN. Our requirement is to create implementations for a range of mainframe (IBM, CDC, UNIVAC) and mini (VAX, PRIME) computers. Other tasks will involve software security and standardisation.

The post is based at our Headquarters in Stevenage and includes responsibility for our in-house prime 400 system. A car will be provided and the remuneration package includes a results-related bonus scheme. Removal assistance is also available.

Compeda specialises in the production of software systems for use by engineers for the solution of design problems in a wide range of industries. Our software is based on Research and Development from British Universities and Research Establishments. Our range of products, already used in industry, include GAELIC for integrated circuit layout and analysis, and the Plant Design Management System (PDMS) for chemical plant modelling and design. Both of these systems are world leaders in the relevant application areas. Compeda is financed by the National Research Development Corporation and is the leading British company involved in the international exploitation of computer aided design software. The headquarters of the company are at Stevenage and subsidiary offices exist in New Jersey, California, Germany and Holland.

Write with career details to
KG Trickett
Compeda Limited
Compeda House
Walkern Road
Stevenage
Hertfordshire SG1 3QP

MYRIAD

SENIOR ANALYST/ PROGRAMMERS

2960 INSTALLATION **C. £7500**
S.W. LONDON

A major group of Companies whose Head Office is situated in S.W. London, easily accessible by all forms of transport, have completed installation of a dual ICL 2960 configuration and are now progressing to the next phase of development.

A comprehensive plan of Systems and Programming activities has been established with board level approval and four major systems are scheduled for implementation by the end of 1980.

SENIOR ANALYST/PROGRAMMERS

Joining a technically stimulating and progressive department candidates will receive formal training in key areas of large 2900 development. Having attained senior programming levels candidates should have good COBOL experience and be familiar with 1900 software. An interest in commercial and financial systems would be ideal and whilst gaining advanced technical expertise the persons appointed will be encouraged to develop their skills in analysis.

All positions have an attractive benefit package including Flextime, four weeks holiday, and Pension Scheme.

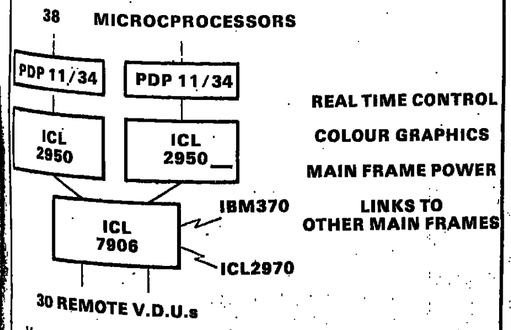
Ref. E1/0908

MYRIAD APPOINTMENTS LIMITED
30 Fleet Street London EC4Y 1AA
01-353 0981 (24 HOURS)

southern electricity

ANALYST PROGRAMMER
SALARY UP TO £7,500

(BASED NEAR MAIDENHEAD)



If you are ambitious, have some experience in the fields mentioned and want to join a team of professionals developing new and interesting projects, contact Mike Shore or Mike Viney on Littlewick Green 2166 or write for an application form to Mrs. Pam Polak at Southern Electricity House, Littlewick Green, Maidenhead, Berks. SL6 3QB, quoting 58/79, by not later than August 29th, 1979.

Systems Programmers~Paris

Our client, a major American company, producing industrial chemical products, has recently ordered an IBM 3031 to replace the existing 370/135. An opening exists for a **CICS Systems Programmer** to join the high-calibre development team based at their computer centre near Paris. This team is utilising the most advanced techniques to rationalise the company's existing European network. Applicants must offer an in-depth knowledge of Assembler, Cobol and DL/1, and have been involved in the generation/implementation of new CICS releases as well as tuning and monitoring the performance of the existing software. The successful candidate must be prepared to participate in the evaluation of new software from IBM and the independents and to assess its relevance to the installations requirements. This is a rare opportunity to further your career and develop State-of-the-Art DP technology in a permanent position in France, whilst benefiting from the resources of a truly international company. A working knowledge of the French language is essential

£10-16K

Consultant

A consultant is required by this small, rapidly expanding Central London Group. At least 5 years DP experience is required, particularly in the areas of database and/or communications on mini computers, plus an ability to liaise with customers. **£7-9K + Profit Sharing**

Fortran £7K

A leading Bureau with international connections is seeking Fortran programmers with at least 2 years experience to work in their Surrey offices. Knowledge of finite analysis, modelling and forecasting applications would be an advantage.

Germany

Communications Consultant required to implement low level protocols such as X25, HDLC. Experience of high level protocols, e.g. virtual terminals and file to file transfer desirable. **£15-18K**

Message Switching

Do you value working at the forefront of technology in the message switching field? If so, our clients, who are market leaders in their field, have authorised Matrix to initiate serious negotiation with a view to offering you a superlative career opportunity. Several positions have arisen within development teams based throughout S.E. England and the E.E.C. Matrix has been instructed to shortlist suitable candidates for the following posts: **Project and Team Leaders, Systems Designers, Analysts and Programmers**, both senior and junior. The hardware background is not particularly relevant but experience at the programming level calls for either Assembler, CORAL, RTL/1, or BASIC. Relocation expenses will be met where applicable, and big company benefits are offered in keeping with our Client's prestigious reputation.

UK-to £9.5K
EEC-to £15K

Radar DP~Europe

Senior Systems Designers and Senior Real Time Programmers are required for a number of advanced air defence system projects being undertaken by the Dutch, Belgian and German offices of a large and prestigious British Systems and Software Group. Particular machine or language background is less important than a thorough grounding in real-time system principles plus real-time implementation experience. Radar data processing systems experience is of especial interest, particularly at the system design level. Our Client also offers a wide variety of long term opportunities as Consultants, Software Specialists and Managers in an expanding, international group of companies with a reputation for project reliability and quality control. Relocation expenses will be paid. Benefits include life and health insurance and optional company pension scheme.

£12-18K

Financial

Our client, a rapidly expanding Software House, Service Bureau and Consultancy is urgently seeking **Customer Account Supervisors** for their Croydon and City offices. Work will include Data Control, Package Installation and Quality Control. There will be a considerable amount of customer liaison and participation in the Sales effort of the company is expected. A minimum of 2 years programming in a commercial environment, preferably a combination of minis and mainframes, is essential. A general financial background including knowledge of accounting or banking will be very welcome. Initiative, flexibility and a willingness to work hard will be well rewarded both in terms of salary and job satisfaction. This company offers great scope for learning new skills and unrivalled opportunities for promotion. Benefits include profit sharing, non-contributory pension, life assurance and BUPA schemes, LV's, share purchase scheme and relocation expenses where applicable.

£6-8.5K + Bonus

PL/1

PL/1 Programmers and Project Leaders are required by an International company for Central London, Herts and Hants. IBM hardware and DB experience advantageous. **Programmers £5-7K & Project Leaders £6.5-8.7K**

W. London~V.R.C.

This manufacturer is seeking Assembler and COBOL Programmers with a minimum of 9 months experience. Applications include invoicing, inventory control, management information etc. Excellent career prospects. **£4.9-6.7K**

Oxford £6-9K

Our client requires Operating Systems Designers and Compiler Writers, having at least 2 years in software development, to join their research team near Oxford. Opportunities for overseas travel frequently arise.

MATRIX

10 Grenville Place
London SW7 4RW
01-373 3063

CONTRACT

MVS SYSTEMS PROGRAMMER	– KENT
OS COBOL/ASSEMBLER	– S. COAST
ANY COBOL/ANY DATABASE	– BERKS
TECHNICAL AUTHOR	– BERKS
HONEYWELL L6 SCREENWRITE	– BERKS
ICL FILETAB	– KENT COAST
2900 T.P. ANALYST	– ESSEX
2904 M.T.S.	– LONDON
1900 COBOL GIII	– LONDON
1900 COBOL GII	– BEDS

RATES £250-£400 p.w.

WE WILL OFFER YOU

- ★ A personal health scheme covering sickness for 6 months.
- ★ Regular and prompt payment.
- ★ Tax guidance service.
- ★ A professional attitude towards YOUR requirements.

For further information please contact:

Mike Burton or Peter Edwards at

DIRECT PROGRAMMING SERVICES

51 LONG LANE, WEST SMITHFIELD LONDON, EC1

Tel. 01-606 1738/1739/1730 (24-hr. service)

Licence No. SE(A)3081

OPERATIONS MANAGEMENT

YOUR FIRST OPPORTUNITY

MINI COMPUTER FELTHAM, MIDDLESEX.

A mini computer is being installed in our client's modern offices in Feltham to handle the increasing volume of business.

A Computer Operations Manager is required to be responsible for the supervision of staff, the scheduling of work and the general day to day running of the installation

This is an ideal opportunity for a career minded person, with a data processing background, to move into operations management. Prospects are excellent and the company offers future involvement in all aspects of computing. Salary will be negotiable around £5,500 and company benefits include 4 weeks annual holiday and a subsidised staff restaurant.

If you are currently employed in operations, data control or a similar environment and feel that you are now ready to run your own operations department, contact PATSY BARNES at the Croydon office for further information.

Positions open to male & female applicants, please telephone (24 hour service) for initial discussion or write to address below. QUOTE REF CW 159-9P

COMPUTER AND PROFESSIONAL PERSONNEL CONSULTANTS **CAPP ASSOCIATES** LONDON AND MANCHESTER — Computing Services Association — **01-686 9693** A.M.P. HOUSE, DINGWALL RD CROYDON, CR9 2AU

HONEYWELL IDS/TDS ALL AREAS £275 + Exp.

01-262 2251

BASIC/COBOL PROGRAMMERS

Brand new project

S.W. London/N.W. Surrey

To £6,000+ p.a.

Telephone: Glenda Jones, 01-505 5576

International Management & Personnel Consultants to High Technology

TRY SELLING SOMETHING DIFFERENT THIS YEAR

SALES MANAGER DESIGNATE – LONDON AREA

PROJECT MANAGEMENT SYSTEMS

Our Clients are a division of a Multi-National Conglomerate, who will achieve c. £1 million worth of business this year.

The division was created eighteen months ago and has developed enormous interest in their Project Management Systems to the Engineering and Petro-Chemical Industry. They provide a "Total Solution" concept with a comprehensive range of software, packages and support.

The Company has built a reputation for providing excellent career paths which is reflected in a minimal staff turnover. Projections for the coming year prove the need for additional Account Managers and a Sales Manager Designate.

Successful candidates should have an excellent sales record preferably with a background in Engineering or the Petro-Chemical Industry. A high salary will be provided, plus commission, Company car and other benefits worth a realistic c. £14k p.a.

This is an unusual opportunity and will provide a tremendous amount of job variation and satisfaction.

For an immediate interview please telephone the London office, quoting reference number DVW/U1.

IMPC LTD. 72-75 Marylebone High Street London W1M 4AJ. Telephone 01-486 5644

I.M.P.C. (NORTHERN) LIMITED. Austin House, Charlotte Street, Manchester. Telephone 061 236 7026/7/8.

I.M.P.C. (IRELAND) LIMITED 20 Upper Fitzwilliam Street, Dublin 2 Telephone 0001 7663 87 0001 7665 43.

INSIGHT MARKETING & PERSONNEL CONSULTANTS LTD. 72-75 MARYLEBONE HIGH STREET LONDON W1M 4AJ.

INBUCON

ACCOUNTING SYSTEMS PROJECT CONTROLLER

London, W.1 c. £7,000

A UNIQUE OPPORTUNITY HAS ARISEN WITH OUR CLIENT, ACC MANAGEMENT SERVICES LIMITED, PART OF THE ACC GROUP — TELEVISION, FILMS, RECORDS AND MUSIC.

Reporting to the Director of Group Data Processing and Consultancy Services you will liaise with other companies in the Group, working on:

1. Designing and developing accounting based computer systems.
2. Developing and using a consolidation package on in-house terminals.
3. Co-ordinating use of a general ledger package for two companies in the Group.
4. Advising and assisting other companies in the Group in implementing and using accounting packages.

If necessary, formal training in systems analysis and financial modelling will be provided.

Candidates for this post should have:

1. A numerate or business studies degree.
2. A knowledge of accounting systems.
3. An interest in internal consultancy.
4. Experience of working with computers and computer terminals.

For an initial discussion in complete confidence, please telephone us on extension 57, or write in confidence quoting Ref. 101.

INBUCON MANAGEMENT CONSULTANTS LIMITED COMPUTER PERSONNEL 197 KNIGHTSBRIDGE, LONDON, SW7 TEL: 01-584 6171

datascene

RECRUITMENT CONSULTANT

SYSTEMS & PROGRAMMING c. £9,000

In a varied and fulfilling role, you will work closely with both clients and consultancy staff on all aspects of recruitment: from job identification, through to advertising, interviewing, selection and the presentation of short lists.

You should be 25+, professional in approach, and already have a proven track record of success in the DP field, which should include experience within Systems & Programming. This, coupled with sales motivation, business sense and the capacity for hard work, should reap more than ample rewards.

For more information please call Basil Pearce

Datascene Recruitment Ltd. Sceptre House 169-173 Regent Street London W1R 7FB **01-439 1856** 24 hour answer phone

COBOL PROGRAMMER

★★★ EXPERIENCE	– 2-3 years
★★★ SALARY	– to £6,000
★★★ LOCATION	– Crawley, Sussex HQ of International Manufacturing Organisation
★★★ APPLY TO	– ATA SELECTION RECRUITMENT 38 The Broadway Crawley, Sussex Tel: 514071 Pat Redfern

ata

Royal Greenwich Observatory

La Palma Computers Group

PROGRAMMER

A vacancy has arisen in the La Palma Computers Group for a programmer to work on the computer control of a 1.0-metre telescope, one of the telescopes which is to be sited at the new observatory on La Palma in the Canary Islands. The person appointed will be expected to work with the 2.5-metre telescope programmer on common software and to develop and commission a complete system for the control of the 1.0-metre telescope.

The successful applicant will work initially for a period of two to three years at the Royal Greenwich Observatory, Herstmonceux and then will be expected to undertake tours of duty on La Palma commissioning software and providing assistance in the early stages of its use.

This post, which will be graded Higher Scientific Officer or Scientific Officer depending on the qualifications and experience of the successful applicant, will be particularly suitable for a Physics or Computer Sciences graduate who has a First or Upper Second Class Honours Degree and who would like to spend some time abroad. Applicants with a good Maths or similar degree will also be considered.

Salary scale

HSO current **£4727-£6211**; 1.1.80 **£5097-£6737**

SO current **£3289-£5085**; 1.1.80 **£3591-£5486**

Starting salaries above the minimum of both scales for candidates with suitable experience and qualifications.

Non-contributory pension scheme

Application forms and further details from **Mr. N. Jones, Royal Greenwich Observatory, Herstmonceux Castle, Hailsham, East Sussex, BN27 1RP.**

Closing date: September 7, 1979.

Anglian Water Authority

ELECTRONIC INSTRUMENT TECHNICIAN

(Computer Analogue)

Post No.: R3R29 Grade 4 £3,867-£4,164 (plus £312 p.a. supplement)

Applications are invited from suitable qualified and experienced persons for the above post based at Boston within the groundwater unit of the Resource Planning Section of the Divisional Engineer's Department. Applicants are expected to have a degree or HNC or equivalent in computer sciences and electronics and several years' relevant experience. Applicants should be able to collate and analyse hydrometric data and the ability to design, construct and maintain simple electronic component and circuit design.

The duties of the post include working in a small team under a hydrogeologist in connection with the programming, operation, routine maintenance and improvement of electronic analogue and computer equipment, simulating and modelling groundwater resource systems, including the collation, analysis and programming of relevant data and the preparation of reports and experimental results.

Groundwater forms an important contribution to the Division's Water Resources and a wide programme of investigations and surveys is in hand and will continue in future years. The post provides an opportunity to broaden and widen experience in analogue and digital modelling, and to gain specialist knowledge in connection with groundwater modelling.

NJC for Water Service Staffs conditions of service apply, and relocation expenses are repayable in appropriate cases. The post carries a casual users car allowance, and at present a review of salaries is being negotiated.

Application forms, which are returnable by 10th September, 1979 are available from the Divisional Manager at the address below:

LINCOLNSHIRE RIVER DIVISION, 50 Wide Bargate, Boston, Lincolnshire PE21 6SA

Datasolve Datasolve Datasolve

We've made things easy for you!

If you're chasing a new job or a new contract, save time by filling in your application form here and now.

Personal Please write in ballpoint, using block capitals.

Surname ________ Forenames ________

Address ________

Tel. Home ________ Office (discretion will be used) ________

Age ________ Place of Birth ________ Car? ________

Are you prepared to relocate? ________ UK/Abroad (delete)

Experience Place no. of yrs. in box, e.g. IBM 360/370 [4]

Machines: Please specify model.

IBM 360/370 / IBM others (specify) / ICL 1900/2900 / ICL others (specify) / Honeywell / Univac / Burroughs / PDP / Other mainframes (specify) / Other mini-computers (specify)

Applications

Commercial / Financial / Payroll / Production control / Stock control / Scientific / Realtime / Software / Database / Message switching / Communications / Data transmission / Central process / Teleprocessing / MIS*/CPA*/PERT* / Magnetic tape / Disk / Others (specify)

Languages

Cobol / Plan / Assembler / PL/1 / Fortran / Filetab / RPG11 / Auto*/easy*/user code* / Others (specify)

Job Titles

Project leader / Systems analyst / Systems engineer / Analyst/programmer / Systems programmer / Programmer / Operations supervisor / Operator / Consultant / Sales representative / Others (specify)

Operating Systems

DOS / OS / George (specify) / CICS*/HASP*/GRASP* / DBOMP*/MVT*/IMS*/CMS* / Others (specify)

*Delete where inapplicable

Position sought Please state briefly the type of appointment you are seeking.

Minimum salary £ ________ Notice required/Date available ________

Signed ________ Date ________

Cut out the whole advertisement and post to the address below.

Knight

Knight Computer Services Limited

Staff Services Division of BOC Datasolve Group and a member of Computing Services Association

Knight Computer Services Limited, 14 Old Park Lane, London W1Y 4NL

01-491 4706

or when busy 01-439 3411

CLASSIFIED COPY

All classified copy should reach our offices no later than 5.30 p.m. on the Monday preceding Thursday's publication. If complete artwork is supplied 12 noon on a Tuesday.

Ring David Abbey for further details on 01-261 8016.

BUSINESS ANALYSTS

Wiltshire & London

If it means more to you than the visual indicates and you are excited by the implications of the new philosophies and technology then the posts available with our client could be ideal for you.

While other organisations think about setting up the electronic office our client has already started to create it. It features IBM 4300, communicating word processors and IBM 3/50 hardware and uses advanced software.

COULD YOU BRING THE HUMAN TOUCH TO THE ELECTRONIC OFFICE? Further business analysts are now needed to sustain the high pace of development within the organisation.

We are looking for a particular type of person rather than a particular type of experience but certain qualities are essential.

Candidates must understand the implications of convergence, (not necessarily the deep technicalities,) of word processing, telecommunications and data processing, must have the self motivation to work on their own initiative or as a member of a small potent team; must be able to agree plans with director level users and to be able to deliver results on time and within budget; must be able to show a record of achievement in business systems.

Our client is an insurance broker, part of a major financial group. A knowledge of insurance or financial systems would therefore be valuable although not essential.

Whether you enjoy living in Town or in the country a suitable location is available for you. If you have to move, your relocation expenses will be paid. Starting salary will be competitive and attractive benefits apply. Telephone Capp Associates to find out more.

Positions open to male & female applicants, please telephone (24 hour service) for initial discussion or write to address below. QUOTE REF. CW164-9H

COMPUTER AND PROFESSIONAL PERSONNEL CONSULTANTS

CAPP ASSOCIATES
LONDON AND MANCHESTER

Computing Services Association

01-686 9693
A.M.P. HOUSE, DINGWALL RD.,
CROYDON, CR9 2AU

0702 615551/2 TASK FORCE 0782 410217/8

Computer Consultancy Services

If you have good relevant experience you too could join **TASK FORCE.**

Our solution to computer consultancy is to provide the best deal for freelancers and therefore provide the best support for our clients. With **TASK FORCE** you will work as part of a friendly professional team, we can give you more cash, more jobs and more benefits, this is how it works:

ON A CONTRACT BASIS
- —We will pay you very competitive rates and give you regular work training and security.
- —If required we will set you up as a limited company. This gives you control of your tax payment and means you could pay much less.
- —We will solve your administration headaches, your company set up, book-keeping, invoicing, accounts and tax returns will be done for you by professionals as a free service.
- —Registration for VAT benefits you on all your outputs, we of course administer the accounts.
- —As a limited company you can have a lease car arrangement (tax free payments) which we will provide and organise with favourable terms.
- —We can get you insured against long-term sickness and set up a pension plan.
- —Long term service qualifies you for holiday payments.
- —End of contract bonus schemes and retainer deals can be negotiated.

ON A PERMANENT BASIS
Salary negotiable between £6k-£9½k + car, training, security and all company benefits.

CONTRACT REQUIREMENTS

Singer 1500 or System 10 Progs. £250 to £500 p.w.
U.K. Europe or Canada Honeywell Level 66 IDS/TDS Progs. £250+ P.W. London.
Univac 1100 Cobol £235+ P.W., in Wilts.
I.C.L. 20900 Cobol £235 P.W. All areas.
I.B.M. Cobol/Assembler Progs. £245+. Essex.
Coral any machine Progs. £250 P.W. Midlands.
I.C.L. George II or George III. Tech. Support £225 P.W. Midlands and Wales.
I.C.L. 20900 VME/B Support £250 P.W. Yorks.
I.B.M. Cobol Progs. with IMS £450 P.W. Germany.
I.C.L. VME/K Systems Support £450 P.W. Germany.
Plan of Cobol Progs. £400 P.W. Germany.
Any Computer Person with fluency in any European language/Top Pay.
More contracts are imminent. Permanent positions with TASK FORCE will be considered for all requirements listed.

PERMANENT POSITIONS FOR OUR CLIENTS

Senior Analyst for manufacturing company. N.W. London. Circa £7½K. Plus all company benefits and relocation package.
I.C.L. 20900 George II + support. South Wales, to £6½K.
Scientific/Realtime Progs. in Surrey with Mini-machine experience, £5½K to £7K plus all usual benefits.
Cobol/Assembler Progs., 2 years+ experience South-East Essex, £5K to £6K + Mortgages.
I.C.L. 20900 Cobol Progs., 2 years+ experience London City, £5K to £6½K + 3½% Mortgage.
Honeywell level 64/66 Cobol. London and North West. Top salaries.

Contact us (Louie, Kim or Tony) in Southend:

A.M. TASK FORCE LTD.
2 Southchurch Road, Southend-on-Sea, Essex SS1 2NE
Telephone: Southend-on-Sea (0702) 615551/2

OR

in our new Stoke Office (Jan, Paul or Derek)

A.M. TASK FORCE LTD.
44 Kingsway, Stoke-on-Trent, Staffs. ST4 1JH
Telephone: Stoke-on-Trent (0782) 410217/8

OUR REPUTATION TELLS ALL

MYRIAD

OPERATORS – NO NIGHTS

N.W. LONDON **c. £5500**

One of the most successful retailing organisations in the U.K. has recently installed sophisticated mainframe equipment and is currently seeking to recruit additional operators.

A variety of interesting applications are processed incorporating a mini-based communications network presenting a technically stimulating environment with plenty of job interest.

Candidates should have at least eighteen months' operating experience, preferably in an IBM System 3 environment and be capable of demonstrating both initiative and a sense of responsibility since they will be required to work with a minimum of supervision.

To the enthusiastic person, there is the opportunity to accept additional responsibility of running a shift and total involvement in an installation utilising modern equipment and operating techniques.

Apart from a realistic commencing salary, the company also offer attractive benefits normally associated with major organisations.
Ref. N2/1608

MYRIAD APPOINTMENTS LIMITED
30 Fleet Street London EC4Y 1AA
01-353 0981 (24 HOURS)

MINI COMPUTER TURNKEY PROJECTS

CROYDON AND MERSEYSIDE

to £7,500 p.a. + many company benefits

Due to increasing activities in the turnkey field, an established computer services company and subsidiary of an international group wishes to recruit an additional project team.

2 Project Leaders
2 Senior Programmer/Analysts
1 Leading Programmer

Applications are invited from programmers with two-six years' experience. Preference will be given to candidates with mini-computer experience (IBM 32/34 or DEC PDP 11) but this is by no means essential as full training will be given.

The company offers excellent working conditions and benefits which include four/five weeks' holiday, free or subsidised meals, non-contributory pension scheme, free life assurance, and preferential mortgage scheme.

Ref: CW 32/1.

Please contact: **CHRIS TILBROOK**
TYLIN PEOPLE

TYLIN

A division of Tylin Management Systems Ltd.
Leon House, High Street, Croydon
CR9 3NH. Tel. 01-680 2323

A Member of the TATE & LYLE GROUP

Member of Computing Services Association

[illegible] PROGRAMMERS

We have created an excellent opportunity for an individual who is wishing to make the transition from Operations into Systems Programming.

Our ideal applicant will have gained 2/3 years operations experience during which time he/she will have had considerable exposure to OS JCL and IBM utilities.

If you are able to demonstrate knowledge of a high or low level programming language, it would be considered a distinct advantage.

Initially, you will be expected to become involved in the conversion of our twin IBM 370/158 installation from OS/SVS to MVS, providing a support facility to our users and effecting a successful changeover.

We are prepared to offer whatever training is necessary to ensure your future career progression provided that you are able to convince us of your potential and ability to work with the minimum of supervision.

Since we are a large International Organisation, you can expect to receive all associated benefits including the prospect of overseas travel.

If you are ready to take this important step in your career, contact our Advising Consultant, ANDREW CARTER ON: 021-236 3781 (24 hour answering service).

SPR

Specialist Computer Recruitment Ltd

London 01-935 0871 3 Mandeville Place, Wigmore Street, London W1M 5LB
Birmingham 021-236 3781 35-37 Great Charles Street, Queensway, Birmingham B3 3JY
Manchester 061-833 0427 Blackfriars House, The Parsonage, Manchester M3 2JA

JBA

Technical Consultants

Germany/Europe — £20,000 +

An established Swiss-based software house with operations in Switzerland, Germany and Holland require senior personnel as Consultants. Applicants should have professional qualifications (at least degree level) and at least 8 years experience in their field.

Particularly of interest are individuals with in-depth knowledge of one or more of the following:

MVS, CICS, VTAM, BTAM, TCAM, RTAM, NCP, SNA, IMS, etc.

Compiler implementation, operating system design, multi-processor development, high-reliability systems design, TP networks, Database design et al.

Excellent salaries and relocation assistance given.

Contact: Andy Wright & Mike Creamer

Micro S/W Quality Assurance

Swindon — neg. c. £10,000

Our client is a uniquely successful small company, which has developed a series of "leading-edge" software products for interactive micro processor program and applications development. The expansion of their product range over the past six months has largely been, and will continue to be, a succession of self-generating logical steps into the wider sphere of operating systems per se, as well as development tools.

This growth has led to a requirement for "Quality Assurance" type of role, in which a software orientated individual would not only vet developed software but also maintain the company's ANSI standards etc. Candidates must, therefore, have a software orientated background and be fully conversant with IBM COBOL and its uses.

An important and vital position, with a substantial salary to match! Relocation assistance is negotiably available.

Contact: Andy Wright

Instructors

Herts. — neg. to £8,500

A number of vacancies have been created within the Education Division of one of the U.K.'s major computer manufacturers. Courses given, cover an extremely wide range of technical and other skills for engineering, systems, programming and customer/clients staff. Applicants must therefore possess sound all-round d.p. experience which should include management presentations and user training.

Excellent career prospects for the ambitious individual.

Contact: Margaret Stevens

Business Analyst (Minis)

Berkshire — Neg £8,000 + Benefits

This outstanding opportunity for a successful Analyst/Programmer to move on to pure Business Analysis. You will be given the chance to design and implement new and extremely complex financial/accounting systems, around a worldwide network of minis. This will necessarily involve overseas travel (to the U.S.A. and Far East) to a limited extent — ie NOT plane-hopping or extended stays abroad — to help implementation at each site.

Whatever your hardware background, if you understand the concepts behind networked minis and have a sound accounting systems knowledge, this represents a real career building move.

Company benefits include an excellent pension scheme plus medical (like BUPA/PPP) insurance and free life assurance schemes. Generous relocation assistance is also available if required. Additionally the initial starting salary will be reviewed within 6 months.

Contact: Andy Wright

Database Programmer

City — to £6,500

A large Shipping company requires a highly technical applications programmer/systems programmer to work with their data administrator. The successful applicant will be involved in technical control of their database (IDMS) and data dictionary and will have to liaise between departments.

The company is looking for a programmer with up to three years experience of IBM ASSEMBLER and ideally PL/1. Knowledge of a database and T.P. would be an advantage but training will be given in PL/1, IDMS and data Dictionary techniques.

Salary according to experience. This is an excellent opportunity to work on new technology projects.

Contact: Margaret Stevens

Real-Time Programmer

South West London — neg. to £6,500

JBA has been retained to recruit an experienced Programmer for a specific project, which is an advanced and innovative micro-based satellite navigational system. Candidates, ideally graduates, must have a predominantly software orientated background, with experience of high level languages. CORAL, FORTRAN or ALGOL are of particular interest. Experience of hardware development is not required although would be obviously extremely valuable.

The company is a well established and progressive organisation with a deserved reputation as a world leader in the design and manufacture of communications systems. So an absorbing career is offered.

Contact: Margaret Stevens

For further information on any of the above vacancies, please contact the appropriate consultant. If your qualifications do not match the above positions but you are seeking other opportunities please contact us anyway.

JAMES BAKER ASSOCIATES, International Personnel Consultants,
32 Savile Row, London W.1. Tel: 01-439 9311.

SYSTEMS ANALYST

London — £5,300-£6,600

ELLERMAN LINES LTD need an experienced Systems Analyst to join a team which is developing a variety of applications in Shipping, Brewing, Insurance and Travel. Systems will be based upon the group's new Twin ICL2904 computers which will provide on-line services to various offices throughout the UK. The appointment is based in the City, but some travelling will be necessary.

SALARY In range £5,300-£6,600 depending on experience and with opportunities to advance.

REQUIREMENT Min. 12 months systems analysis, including experience of accounting systems.

Phone or write to Dave Hammond, Ellerman Lines Ltd., 12-20 Camomile Street, London EC3A 7EX. (Telephone 01-283 4311)

ELLERMAN

Systems Analyst/ Programmers

£4,500-£5,750 — Edinburgh

The Institute of Occupational Medicine is the coal industry's research centre for medical and allied problems. We seek experienced analyst/programmers for the development of research-related computer projects. Languages used are Cobol, Fortran and Assembler. Access to an IBM 370/158/3033 system is via a multi-function terminal system with interactive and batch facilities.

Salary, dependent on experience and ability, will be in the range £4,500 – £5,750 and is supported by excellent conditions of employment.

The appointment is for a period of three years.

Please apply, in writing, to

NCB — The Area Staff Manager/Secretary, National Coal Board, Green Park, Greenend, Edinburgh EH17 7PZ.

THE UNIVERSITY OF LEEDS
DEPARTMENT OF APPLIED MATHEMATICAL STUDIES

Applications are invited for the post of

COMPUTER OFFICER

in Applied Mathematics. The duties of the Computer Officer will include (1) provision of assistance in computing to undergraduate and postgraduate students, and to staff members (2) the conduct of an independent line of personal research. Candidates should possess (or should expect shortly to possess) a Ph.D. in some branch of science or engineering relevant to the Departmental interests, which lie mainly in the fields of continuum mechanics, astrophysics, mathematical physics and numerical analysis. The appointment will be made for a fixed period of three years.

Salary at an appropriate point on the IA scale for Research and Analogous Staff (£4334-7621) (under review) according to age, qualifications and experience.

Further information on this post can be obtained from the Head of Department, Professor D. G. Crighton (0532 31751, ext 7304).

Application forms and further particulars may be obtained from the Registrar, The University, Leeds LS2 9JT, quoting reference number 61/7. Closing date for applications October 8, 1979.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE
(University of London)
Keppel Street, WC1E 7HT
DEPARTMENT OF HUMAN NUTRITION

COMPUTING ASSISTANT

A Pre-School Child Growth Survey requires a computing assistant, to work as a member of a small team up to 30 September 1981 on the handling of data from a large longitudinal survey, with responsibility for data checking and for maintaining data files in preparation for analysis.

Applicants should be qualified in computing to HND level or equivalent, and have had experience in data processing.

The University of London Computer Centre CDC 6600 system is used.

Good salary will be in the range £3620-£4801 (under review), depending on age and experience.

Applications, consisting of full education and career details and naming two referees, should be sent to Secretary (A1) at the School.

STAR JOB SPOT

DATA CONTROL SUPERVISOR/ SENIOR CONTROLLER

To £7,000 — C. LONDON

A large central London Service Bureau requires a Data Control Supervisor and Senior Data Controller, both positions requiring in depth OS JCL, supervisory and customer liaison experience. These senior positions need mature applicants of a high standard. If you have the right background, ring now for more details.

CW 33/1 TRICIA

OPERATOR

To £4,800 — C. LONDON

If you have 6 months' + DEC PDP 11 experience, then here is an opportunity to join a banking installation and enjoy the excellent benefits offered. These include mortgage assistance, Non CPS and a bonus scheme. Don't delay — ring now

CW 33/2 TRICIA

OPERATORS TO SHIFT LEADERS

£3,800 to £6,500 — NR. HAYES, MIDDX.

Join one of the most advanced computer installations in the country. The latest IBM 3000 equipment plus ICL 1900 series. This major commercial business offers free BUPA, CPS, and many other attractive perks

CW 33/3 TRICA

JUNIOR OPERATORS

c. £4,000+

Do you have 6 months' + IBM, ICL or other operating experience? Why not broaden your horizons and apply for one of our excellent junior positions in London and Home Counties areas. Promotion prospects are good, and company benefits first rate

CW 33/4 TRICIA

JUNIOR PROGRAMMERS

£4,000 to £5,000 — SE ENGLAND

You have only 1 year's commercial experience? Then you are in great demand. We have a large selection of first-rate companies who need people like you. Some offer mortgage assistance to the right candidates after short period with them

CW 33/5 TRICIA

FREELANCE PROGRAMMERS WANTED

U.K. TO £300 p.w.

ICL	1900 2900 VMEB	BERKS	3MTHS.
ICL	2903 MTS2	MIDLANDS	3MTHS.
ICL	2900 SCL	MIDLANDS	3MTHS.
IBM	PL1 CICS	DUBLIN	3MTHS. +

OVERSEAS TO £450 p.w.

IBM	ASS/PL1	MUNICH	2YRS.
IBM	ASS/FORTRAN/PLAN	EUROPE/U.K.	6MTHS.
IBM	COBOL OS	NEW YORK	1YR. +
PHILIPS	SYSTEMS PROGR.	GERMANY	1YR. +

Please ring (FREELANCE) on 01-995 4165 for Contract details.

UCA Recruitment Consultants
UNIVERSAL COMPUTER ASSOCIATES LIMITED
01-995 3883 (01-958 6138 Evenings)
Data Express House, 3 Prospect Place, Heathfield Terrace, W4

VICTORIA APPOINTMENTS LIMITED VA

MANCHESTER

TECHNICAL SUPPORT MANAGER

Salary c. £7500

Our Client, a Manufacturing Group in the automotive components industry is currently involved in the development of new DB/DC systems to support their production control functions to integrate with existing commercial systems.

This development is on IBM 370/138 under DOS/VS with CICS and DL/1 and a new IBM 4341 is currently on order.

The Technical Support Manager is now required to take on the responsibility for all aspects of hardware and environmental software development, together with the Management of Computer Operations, being directly responsible to the Computer Systems Manager.

The successful candidate will have experience in controlling an Operations Department in an IBM installation with at least 3 years' experience of Systems Programming.

If you are a Graduate with approximately 5 years' computer experience and fit the above requirements, we would like to hear from you.

Relocation expenses will be met where appropriate.

Ref: 09879

For an application form in respect of this and many other vacancies contact:

Miss Val Halliwell, Victoria Appointments Limited, 24 Mosley Street, Manchester 2. Telephone 061-236 7319 (24-hr Answering Service) and 061-236 7417. Home 061-440 8134.

CONTRACT

BASIC — c. £225 p.w.

for Micros
13 weeks +
Kingston Upon Thames area

PL1 — c. £230 p.w.

Mainframe
26 weeks +
North West Kent

Phone Derek Pearson or Terry Bate —
01-637 9611

MANAGEMENT & EXECUTIVE SELECTION
Suite 201-6 Albany House, 324 Regent Street
London W1R 5AA

Contract

Programmers-Analysts

If you are thinking of doing contract work why not start here by registering now for immediate and forthcoming requirements.
For further details contact:
Bridget Kotchie
RENDECK LTD. 100 New Bond St. London W1. Tel: 01-629 5438

Rendeck
Recruitment Consultants

LIVERPOOL POLYTECHNIC
Department of Computer Services

POST A
APPLICATIONS MANAGER
POST B
SYSTEMS MANAGER

£7680-£9639 + £72 p.a.

Applications are invited for the above posts which are new positions within the recently-created Computer Services Department.

Plans for an extensive enhancement to the existing facilities are at the earliest stages. Staff levels are under review and a considerable strengthening of the programming staff, which is currently at a minimal level, is expected.

This is a rare opportunity for the successful candidates to help shape and develop the services the department will be able to offer to the Polytechnic in the future.

Experience with interactive facilities in an educational environment is essential.

PLEASE QUOTE REFERENCE LP/342 (POST A OR B).

Closing date is 14 days from the appearance of this advertisement.

Application forms and further particulars from the Personnel Office, Liverpool Polytechnic, Richmond House, 1 Rumford Place, Liverpool, L39RH. Tel: 051-227 5581, Ext. 43.

INNER LONDON EDUCATION AUTHORITY

Computer Programmer

Research & Statistics Division

Salary Range: £5855.64-£8114.64 (Inclusive)

A programmer is required for team of 6 providing support to the Division and branches of ILEA.

Most programming is in Fortran using the CRJE and VSPC tele-processing networks on the GLC's IBM 370 computers. Applicants should be experienced Fortran programmers with, ideally, a degree or professional qualification and a knowledge of statistics.

Details and application forms obtainable from the Education Officer (EO/Estab. 1B), Room 397, The County Hall, London SE1 7PB (please enclose a stamped addressed envelope).

Forms to be returned not later than 4 September, 1979.

SWITCH TO MICHELIN
TAKE A GREAT TREAD FORWARD

OPERATIONS AND DATA PREP SUPERVISOR

MANAGEMENT SERVICES, DEPT., LONDON, S.W.3

Michelin, the world's leading radial tyre manufacturer, wish to recruit an Operations-Data Preparation Supervisor for our Computer Installation in our Commercial Head Office.

The work involves planning and scheduling operations and data preparation: staff work loads; preparation of operational instruction; job assembly and control; maintenance and up-date of tape and disk library; training of data preparation Clerks/Computer Operators.

Sound training in computer operations/data preparation by a recognised manufacturer is essential.

Age range 21-30 years of age, with a minimum of 2/3 years' experience of operating a small main frame or mini computer.

Michelin offers an individually negotiated salary to attract the calibre of Supervisor required; five weeks' paid Holiday plus statutory holidays; free life assurance and contributory pension scheme.

+ Above all, we offer a career associated with first-class products renowned for their quality, together with effective Personnel Policies.

Please write in confidence, giving brief details of age, experience, qualifications and current salary, to:

The Personnel Manager—Commerce (Ref. JFG-DPS 2/79),
(MICHELIN TYRE CO. LTD.
81 Fulham Road, London SW3 6RD
or telephone 01-589 1460 for an application form

CAREER PROGRESSION IN PROGRAMMING

COBOL PROGRAMMERS — £6,500
West London/Middx. — December review

★ Free 4-course luncheon
★ Free car parking

18 months' commercial experience (machine unimportant)

Training will be given in IBM Assembler and CICS/DL1. A committed programme of development will commence early next year for the delivery of an IBM 4341 with fully integrated DB/DC facilities.

Career prospects are excellent within this very prestigious organisation.

SENIOR PROGRAMMERS — £6,900
Central London

★ Cheap mortgages
★ Annual bonus
★ Flexitime

We are particularly interested in hearing from you if you have 2 years' Cobol programming, 1900 GEORGE III or 2900 VMEB desirable, but not essential for this expanding D.P. Department.

Phone Bobbie McCormick for more information on 01-603 7335 or 01-603 5215

IPP Information Processing People
58 Pembroke Road London W8. Telex: 262296 — Computer Services & Recruitment Consultants — **01-603 7335**

FIELD ENGINEERS

System Industries is a Californian Corporation active in the minicomputer peripheral business, with offices in Woking, U.K., Germany and Scandinavia.

Over the next few months we will be expanding our Customer Engineering Department, and will be recruiting Field Engineers at all levels to work on our advanced micro-processor based disc controllers. we are particularly looking for engineers with minicomputer system experience.

Salaries range from £5,000 p.a. to £9,000 p.a. with generous benefits including Private Medical Insurance, Life Assurance and company car.

For more information please ring Prue Birkinshaw on Woking 5077, or write to:

System Industries (Europe)

System Industries (Europe), System House, Guildford Road, Woking, Surrey GU22 7QQ

Borough Engineer & Surveyor's Department

Technical Assistant

(Projects)

£3906 - £5388

A Technical Assistant (male or female) is required to assist the Project Engineer to prepare management information regarding project scheduling, resource planning, etc., using analytical techniques and to assist and advise Engineers and other officers in aspects of data processing, etc. Maintenance of the Management Information System involves using the Council's computer to produce regular comprehensive information on all schemes in the Department's Programme of works.

Training may be given to a suitable applicant, although a candidate conversant with data processing work (e.g. an ability to use a desk-top calculator and/or a paper tape punch machine for computer data preparation/work assembly) would have a distinct advantage.

Further Information and application form available from the Borough Engineer, Town Hall, High Road, ILFORD, Essex, to be returned by 31st August, 1979.

Redbridge London Borough

CHELSEA COLLEGE, University of London
COMPUTING CENTRE

An experienced

SYSTEMS PROGRAMMER

is required to take charge of a small group responsible for general operating system and related software development and maintenance. The Systems Group in addition look after the College Gandalf-based data communications network, and provide more specialised consultancy to College academic departments.

The Centre is building up a Harris S126 (24 user) computer system installed last November, running under the VULCAN operating system, to replace the Elliott 4130 mainframe computer which the Group are expected to continue supporting until late 1980. The Elliott has a PDP11/40 front-end for interactive multi-access, running under DOS V 9 and which also supports RJE to CDC mainframes at the University Centre.

The person appointed will be expected to have a strong systems background, including hardware, and preferably operations experience. Salary will be on the Grade II scale for universities programming staff, £7388-£8954 now, and £7729-£9494 as of 1st October 1979 (inclusive of £502 London Allowance).

Further details, including an application form, may be obtained from the Personnel Officer, Chelsea College, Friese Greene House, Chelsea Manor Street, London SW3 3TW. Closing date 5th September, 1979.

Outstanding Computing Opportunities

The Council will shortly be installing an ICL 2950 and will be developing on-line financial and property database systems. We can therefore offer exciting prospects of extended technical knowledge and provide ideal opportunities for the right people to get in on the ground floor as

Systems Programmer

Who will be responsible for the development of communications using 7502 controllers, and also operating systems and software.

Systems Analyst

To play an active part in the design, development and implementation of a database.

Applicants for both posts should have a knowledge of COBOL, plus the Systems Programmer will need to have a good knowledge of PLAN.

Both posts offer—

- ★ Salaries up to £6756 p.a. inc.
- ★ Housing accommodation or legal fees to £400 for house purchase
- ★ 100% removal expenses.

Further details available from the Personnel Officer, The Council Offices, The Campus, Welwyn Garden City, Herts — Welwyn Garden 31212, Ext. 203. Closing date: August 31, 1979.

WELWYN HATFIELD DISTRICT COUNCIL

We need your support

We have recently invested over £1 million on six GEC 4080's to form the basis of a new internal bureau with 50 on-line terminals providing system development facilities for programmers developing software for a variety of military and civil applications.

To run this bureau efficiently and effectively we need to expand our software support team by recruiting men and women with experience in the following areas of software support:

system software, design, production, testing and implementation.
system and disc file recovery.
software security.
system monitoring and tuning.
fault diagnosis and investigation.

Languages used include CORAL, FORTRAN, ALGOL, and the GEC assembler, BABBAGE. The work involves close liaison with operations and programming teams with the emphasis on integrity and good communication. Experience of GEC software would be an advantage but is not essential.

We can offer you varied and demanding work in a friendly environment with excellent opportunities for promotion and personal advancement. The positions carry highly competitive salaries and benefits including assistance with relocation where appropriate.

If you think we could use your support, contact Chris Hill on 01-953 2030 ext. 3449 or write to him at Marconi Avionics Limited, Elstree Way, Borehamwood, Herts WD6 1RX. Alternatively, telephone: 01-207 3455 anytime (day or night) and we'll send you more information. Please quote reference MA 79143.

MARCONI AVIONICS

SCOTT POLA RESEARCH INSTITUTE UNIVERSITY CAMBRIDGE

FORTRAN PROGRAMMER

A vacancy exists for a Graduate Programmer with substantial experience in Fortran and if possible a knowledge of ALGOL 68 to take charge of Sea Ice data analysis projects.

Duties will include writing programmes in structured Fortran and Data Processing. Salary on the University Research Assistant/Associate Scale (£3497-£6932).

Duties will include writing programmers in structured Fortran and Data Processing Salary on the University Research Assistant/Associate Scale (£3497-£6932). *Apply in writing to:*

The Director
Scott Pola Research Institute
Lensfield Road
Cambridge
(Tel: Cambridge 66499 Ext. 400)

COBOL - Herts

IBM OS COBOL PROGRAMMERS

For immediate start. Michael Jackson experience desirable, but not essential.

Phone AMS 01-638 9319

B.T.D.B. Computer Services

Experienced Systems & Programming Staff

Middlesex

British Transport Docks Board, which is a profitable and commercial ports management organisation, has an established central computer services department. An ICL 2960 with DME/VME/B and MAC on-line development capabilities is to be installed at the Board's Computer Centre this autumn to replace the existing System 4-50 computer. Redifon minicomputers with communications facilities have already been installed at the Computer Centre and at a number of the ports as part of the planned communications network.

Systems Analyst

£6094 – £6864

Will need to have adequate systems and/or programming experience and the correct personality to deal with users at all levels.
Responsibilities include design, development and implementation of a variety of applications, and considerable interaction with users at all stages of development and thereafter to maintain systems integrity.

Senior Programmer

£6094 – £6864

Will need to have substantial programming experience and a genuine interest in both staff and applications development.
Responsibilities include computer suite/file design and the supervision of programming staff within the project team.

Programmers

£5390 – £5874

With a minimum of 12 months COBOL and/or Assembler experience are required.

Our Staff enjoy:

- an attractive and congenial working environment;
- free on-tap refreshments;
- luncheon vouchers 80p per day;
- internal training at our own Staff College;
- in-house and external training for specialised subjects;
- a planned career structure;
- 22 days holiday per annum including bank holidays.

The Computer Centre, which is near Hayes, is readily accessible by road and rail and has its own spacious free car park adjacent to the building.
Interested? Then contact Tim Beven on 01-573 2417 up to 7.00 p.m. any weekday, or if you prefer, please write to:- Commercial Systems and Programming Manager, British Transport Docks Board, Hayes Road, Southall, Middlesex.

British Transport Docks Board
A Nationwide Ports Service

Programmers

Salary to £5,300

Senior Programmer

Salary to £6,500

WATFORD

The Engineering Industry Training Board has the responsibility for securing and maintaining standards in the Engineering industry.

The Computer Department consists of 36 programming and operations staff working on commercial systems on an ICL 1902T running under GEORGE 2S and MAXIMOP, with ICL 7500 range terminal equipment.

We currently require Programmers with a minimum of one year's COBOL experience to work upon maintenance of existing systems and development of new projects, including a system based upon IDMS Database.

The remuneration package consists of a salary up to the levels stated, depending on qualifications and experience, 55p per day Luncheon Vouchers and 23 days holiday per annum, increasing with service plus usual Public Holidays.

Please contact Peter Hart, Programming Manager, on Watford 44322, Ext. 41, for further details, or write for an application form to: Personnel Officer

Engineering Industry Training Board
41 Clarendon Road, Watford WD1 1HS

EITB

TEAM LEADERS

Genuine Starting Salary £6,900 + Car + Benefits

South Birmingham and Coventry (Full Relocation)

"A sight for sore eyes" is probably how Columbus reacted on seeing land after years at sea.

If you share our high esteem for mini computers you'll probably feel the same way when you see our wide range of mini projects currently in hand.

We are a successful industrial manufacturing concern, heavily committed to an on-going systems development programme with mini computers performing a key role. We have a variety of mini computers already in use, the majority being in the DEC PDP range, which perform alongside our mainframes.

SOFTWARE IN USE INCLUDES DECNET, RSX 11M, MACRO, RTL 2, PL 1, IMS DB/DC

We are seeking to strengthen our management structure by recruiting Analysts with experience of minis or even micros, who possess the ability to successfully manage a team of Analysts and Programmers. Responsible for analysis, design and reporting aspects of the projects, we will expect a high degree of self control and the use of initiative.

We would stress that these are progressive positions with substantial benefits and career prospects.

A very comprehensive relocation package is available if required.

TO ARRANGE A CONFIDENTIAL INTERVIEW CONTACT OUR ADVISING CONSULTANT:
MARTIN STAINTHORPE ON: 021-236 3781 (24 hour answering service)
OR: 021-744 1862 (evenings and weekends)

London 01-935 0671 3 Mandeville Place, Wigmore Street, London W1M 5LB
Birmingham 021-236 3781 35-37 Great Charles Street, Queensway, Birmingham B3 3JY
Manchester 061-833 0427 Blackfriars House, The Parsonage, Manchester M3 2JA

Specialist Computer Recruitment Ltd

LECTURERS

London & Home Counties — **to c£8500**

We have been retained by an International Manufacturing Company who are currently seeking Computer Professionals who are either Analysts or Programmers who wish to move into a Lecturing environment.
The ideal applicants will have been educated to degree standard have an outgoing personality and be able to work on their own.
The company offer an excellent salary plus all the fringe benefits you would expect from an International company.

Reference HK 32/1

BASIC + /RSTS PROGRAMMERS

London & Midlands — **to c£8000 + Bonus + Car**

We currently have various vacancies for BASIC Programmers with a minimum of 1 years experience on DEC Hardware under R.S.T.S.
The companies range from Software Houses, Users to Manufacturers.
Applications encompass the whole range of commercial areas through to technical, and if so desired the successful applicants can move into Sales Support or R. + D.
All these positions offer an attractive salary and include the added advantages of company cars or car allowance, and in all cases a form of Bonus Scheme is in operation.

Reference HK 32/2

FORTRAN PROGRAMMERS

London — **to £7500**

One of the leading Consultancy companies in the Civil Engineering field are currently seeking two Fortran Programmers with a minimum of two years experience for their Building Department. One ideally with some knowledge of highway applications and the other with a general construction background.
The ideal applicants will have a degree in Civil Engineering or an associated discipline but this is not essential as a good practical programming background will suffice.
The Company offer an excellent salary plus all the fringe benefits you would expect from a company of their size and standing.

01-439 7871 — **Reference HK 32/3**

ICL COBOL PROGRAMMERS

City — **to £7000 + 4½% Mortgage**

A major Insurance Company is about to take delivery of a new ICL 2960 machine, in order to continue the expansion of their data processing department. They would like to talk to professional programmers with upwards of twelve months ICL Cobol programming experience, although they have vacancies at various levels and would also be interested in people with considerably more experience.
As well as the excellent salary the company have fringe benefits which are second to none including 4½% MORTGAGE, FREE LUNCHES, FLEXITIME, ANNUAL BONUS, and a lot more!

Reference BP 32/4

IBM COBOL PROGRAMMER

Middlesex — **to £9000**

A large engineering company, a leader in its field, is currently involved in a large development program utilising an IBM 370/138. The person they are seeking will have a minimum of three years Cobol experience preferably with some OS/VS1 experience. This is a senior position for a capable programmer who is looking to expand their horizons. In return the right person can expect an excellent sarting salary plus a superb fringe benefits package.

Reference BP 32/5

NEAT 3 PROGRAMMERS

City — **c£7,000**

One of the largest financial organisations is currently involved in a large expansion program on its NCR configuration which will make it one of the most progressive installations in the country.
In order to complete this task they need to recruit several experienced Neat 3 Programmers, who will be retrained in COBOL for a conversion which will start next year.
The commencing salary together with superb fringe benefits including an annual bonus and cheap loans make these extremely attractive positions.

01-439 7871 — **Reference BP 32/6**

Datascene Recruitment Ltd
Sceptre House
169-173 Regent Street
London W1R 7FB

datascene **01-439 7871** 24hour answer phone

MYRIAD

RPG II PROFESSIONALS

N.W. LONDON **c. £6500**

A major manufacturing and retailing organisation with outlets throughout the U.K. and Europe is seeking additional programming staff to work on current and new projects.

This is an ideal opportunity to join a young department in which the successful candidate will be able to gain considerable experience of batch and on-line applications ranging from production and stock control to goods distribution and management statistics.

The installation uses an IBM System 3/15 D with 256 K and works to high standards encouraging the use of the latest techniques for which formal training is provided.

There are two vacancies I) Programmer with minimum twelve months' CCP experience
II) Programmer with minimum twelve months' RPG II experience.

Conditions of employment and opportunities of career advancement are excellent. A first-class commencing salary will be offered. Ref. N1/1608

MYRIAD APPOINTMENTS LIMITED
30 Fleet Street London EC4Y 1AA
01-353 0981 (24 HOURS)

FRENCH-GERMAN-BRITISH RESEARCH INSTITUTE
has a vacancy for

HEAD OF CENTRAL COMPUTER SERVICE

to be responsible for the operation and supporting services for the central computer.

A Graduate in Computer Science or related subject is required, with several years' experience in the operation of computers in the field of scientific research and the ability to lead and organise the group.

The salary will depend on the qualifications and experience of the successful applicant.

Various allowances are payable for personnel moving to the Grenoble area, including an expatriation allowance for non French staff.

Application for this post should be addressed to: Mr. Rimmer, Institute Laue - Langevin, 156X Centre De Tri, 38042 Grenoble, Cedex, France.

THE UNIVERSITY OF LANCASTER

Applications are invited for the post of **LECTURER in the DEPARTMENT OF COMPUTER STUDIES.** Preference will be given to those candidates with experience of microprocessors.
Salary on the scale £4333-£8992

Further particulars may be obtained (quoting reference L153/C) from the Establishment Officer, University House, Lancaster LA1 4YW, to whom applications (5 copies) naming three referees should be sent not later than 3 September 1979.

STOP PRESS!
PROGRAMMERS ANALYSTS
Wanted urgently for Clients
Call Pamela at VIP CONSULTANTS 01-404 0165 (Emp. Agency)

IBM/OS/COBOL IMS WOULD HELP
USA
$20K — $30K
Ring Ian Cox
01-278 6426 (day)
01-272 2794 (eves./w/e)

BRIGHTON POLYTECHNIC
COMPUTER CENTRE

The Computer Centre provides a comprehensive educational computing service currently based on ICL 1904A, Hewlett Packard 2000 Access and Harris S125 computers. A number of micro-based systems will be acquired shortly and planning is about to begin for major developments in the 1980s.
Applications are invited for the following key post

MANAGER: USER SERVICES

£6597-£8253 plus £0.00 per month supplement pending outcome of comparability study.

To head an expanding section with responsibility for providing the primary interface between the Computer Centre and its users.
For further details and an application form, please contact the Personnel Officer, Brighton Polytechnic, Moulsecoomb, Brighton BN2 4AT. Tel Brighton 693655 ext. 2537
The closing date for receipt of applications will be 24th August, 1979.

university college of swansea

Full-Time/Part-Time Programmer
(Readvertisement)

Applications are invited for the vacancy of Full-Time/Part-time Programmer in the Department of Civil Engineering to provide programming support on its S.R.C. Interactive Computing Facility. The system is based round a PDP 11/40 running under the RSX11M operating system. Duties will be mainly concerned with providing a program advisory service for research workers, together with some applications programming. Applicants should preferably have a degree or equivalent qualifications in computer science, engineering or mathematics, with good knowledge of FORTRAN. Participation in DEC training course may be arranged.
The appointment will be for up to three years in the first instance: from the soonest date that can be arranged. The salary will, from October 1, 1979, be on the scale £3,770-£6,355 per annum or pro rata for Part-time plus USDPS benefits, the commencing salary depending on age and experience.
Further particulars and application forms (2 copies) may be obtained from the Personnel Officer, University College of Swansea, Singleton Park, Swansea SA2 8PP, to whom they should be returned by Friday, August 31, 1979.

Scicon

Consultancy at Scicon £5,500 to £9,000 Neg.

Scicon is a leading international computer systems and consultancy company. The Management Sciences Division has a variety of openings for people who hold a good honours degree in a numerate subject and who have demonstrated a successful career over the last two or more years in some of the following areas:

- MATHEMATICAL PROGRAMMING
- MODELLING TECHNIQUES
- SYSTEMS ANALYSIS/DESIGN
- SCIENTIFIC PROGRAMMING
- PROBLEM FORMATION
- STATISTICAL TECHNIQUES

The division offers the opportunity to work on a variety of projects in environments such as Industry, Civil Government, Research Institutes and International Organisations. In particular a major application in the industrial field is within the Oil and Gas Industry. This involves the design of optimal control systems, reservoir development, resource scheduling and investment planning. Experience in any of these areas would be advantageous.

Candidates should have the ability to communicate at all levels and should be ambitious, enthusiastic and able to work under pressure within rigid timescales. This will result in rapid career progression and a commensurate salary.

Contact Jack Cowdy, Director, 01-603 7335

IPP Information Processing People
58 Pembroke Road London W8. Telex 261298 01-603 7335
Computer Services & Recruitment Consultants

AKPE
ALLGEMEINES KRANKENHAUS WIEN
PLANUNGS- UND ERRICHTUNGS-AG
1090 WIEN, LAZARETTGASSE 20
TELEFON 0222/43 89 51 DW

Call for tenders

for computer software products for the New Vienna General Hospital (University-Clinics).

Ausschreibende Stelle:
Allgemeines Krankenhaus Wien,
Planungs- und Errichtungs-
Aktiengesellschaft (AKPE)
Lazarettgasse 20, 1090 Wien, Tel.: 43 89 51 Telex: 136153
für die
Arbeitsgemeinschaft der Republik Österreich
und der Stadt Wien für den Neubau des
Wiener Allgemeinen Krankenhauses (Universitätskliniken)

Scope of tender:
The tender has to include an already existing software product for the fields of patients-, operation-, pharmacy- and goods administration, which is to be used on the one hand with the existing computer IBM/370-158 as the central processing unit and which is adaptable to the special requirements to the New Vienna General Hospital (AKH) on the other hand. Any necessary special peripheral hardware (e.g. TV-screens, printers) as well as processing software should be included in the offer.
Die Angebote sind in deutscher Sprache abzugeben.

Angebotsabgabe:
Die Angebote sind bis Dienstag, 25. September 1979, 8.45 Uhr, in verschlossenen Umschlägen mit der Aufschrift „Angebot über Softwareprodukte Informationssystem AKH, der Firma ...." abzugeben.

Öffentliche Angebotseröffnung:
Dienstag, 25. September 1979, 9.00 Uhr, Sitzungszimmer, AKPE, Wien.

Zuschlagsfrist:
12 Wochen.
Die Ausschreibungsunterlagen sind ab Montag, 13. August 1979 gegen Einzahlung von öS 5.000,– bei der AKPE, 1090 Wien, Lazarettgasse 20, Erdgeschoß, Zimmer E 05, werktags (außer Samstag) von 9.00 bis 12.00 Uhr erhältlich. In dieser Zeit kann bei der Arbeitsgemeinschaft Betriebsorganisation, 1160 Wien, Neulechenfelder Straße 12, Dr. Böhm, Telefon: 43 59 94 nach telefonischer Anmeldung in Unterlagen und Pläne Einsicht genommen werden.*)

Angebote von Firmen können nur dann berücksichtigt werden, wenn die Bieter alle in Österreich notwendigen Berechtigungen und nachweisbar den nötigen Betriebsumfang und die entsprechende Erfahrung besitzen.

*) Die Ausschreibungsunterlagen werden jedoch Interessenten aus dem Ausland auch gegen vorherige Einzahlung von öS 5.000,– auf das Konto bei der Zentralsparkasse der Gemeinde Wien 696-025-303 unverzüglich nach Einlangen des vorerwähnten Betrages zugesandt.

ICL Operators

If you have:

- 12 months on ICL 1900s
- Plus George II experience

Then we would like to see you.

Our existing ICL 1900 installation based at Enfield on the North London/Hertfordshire borders is transferring its operation over the next 2 years to a dual ICL 2972/VME/B system. We need experienced ICL 1900 operators at various levels and offer you:

- **An initial salary inclusive of shift allowance in the range £3,800-£5,800 p.a. depending on experience.**
- **Excellent opportunities for progression.**
- **Full training where necessary.**

To find out more and arrange an early interview ring one of our Computer Operations Managers

Phil Braithwaite or Les Mansfield, on 01-366 1234 ext. 288 or 388 or write to:

The Personnel Officer,
Eastern Gas, Tower Point,
Sydney Road,
Enfield, Middx.

EASTERN GAS

INTEL 8080 Experience?

— Work on the Coast this Summer

We have several immediate and future vacancies in Sussex for people with sound Intel 8080 experience.

If you have a permanent job or are available now we will be happy to discuss the opportunities awaiting you.

Call Neil, Suzy or Richard on 01-491 4706

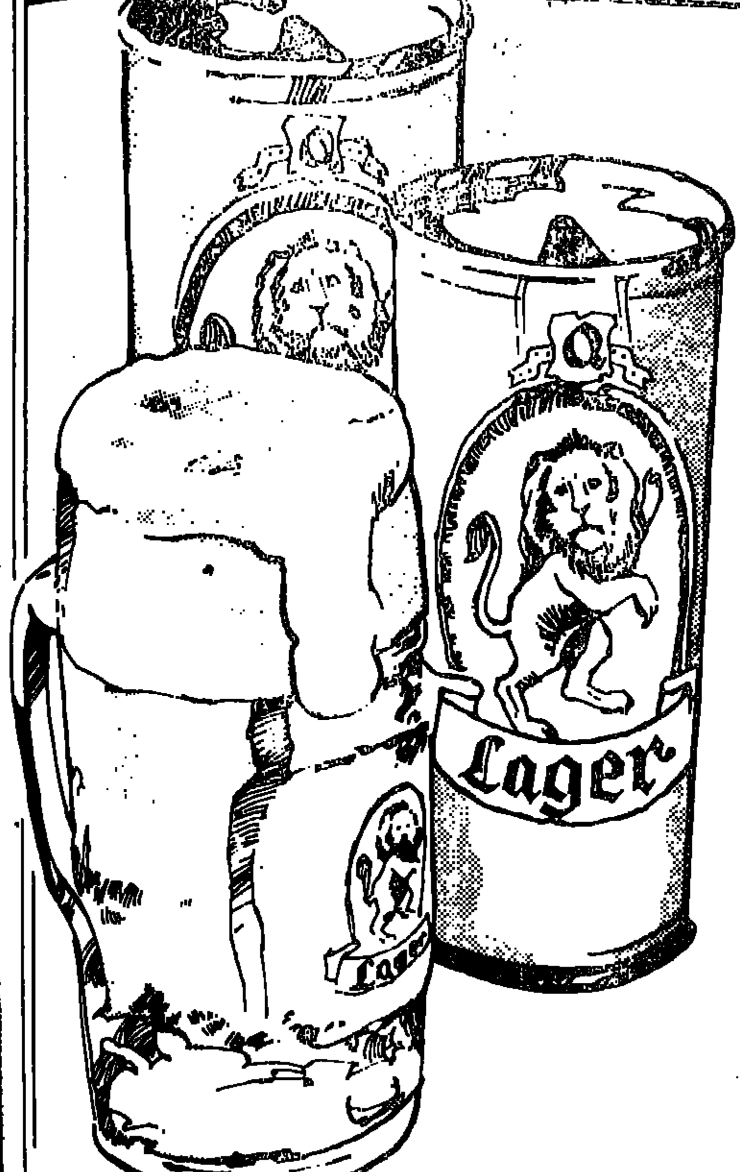
Knight

GEO 111
COBOL
SEP. START
3 MONTHS+
ESSEX
0902-751435

CLASSIFIED COPY

All classified copy should reach our offices no later than 5.30 p.m. on the Monday preceding Thursday's publication. If complete artwork is supplied 12 noon on Tuesday.

Ring David Abbey for further details on 01-261 8015.



ICL OPERATORS and DATA CONTROL CLERKS

change to a London brewery with ICL 2960's and enjoy up to £5,000 with all the benefits!

Located in West London, one of the major UK breweries utilising twin ICL 2960's, have vacancies for both operators and data control clerks.

Two operators, with upwards of one year's operating experience on ICL mainframes are required to complete the existing operations team. A five day week, three shift system is worked.

Vacancies also occur for two data control clerks with experience of controlling computer input/output and capable of maintaining mag tape records. In the control area a sociable shift pattern of 7.30am to 3.30pm and 11.30am to 7.30pm is worked on alternate weeks.

As one would expect from a leading brewery, the benefits package is first class and includes a start salary of up to £5,000 incl. plus generous paid overtime, excellent restaurant and ample car parking. Career prospects are good, for example, these current vacancies have been caused by promotions to the programming area.

For further information (including data sheet describing our client's computer development) contact REX SCOONES at our Croydon office.

Positions open to male & female applicants, please telephone (24 hour service) for initial discussion or write to address below. QUOTE REF: CW 168-9S

COMPUTER AND PROFESSIONAL PERSONNEL CONSULTANTS
CAPP ASSOCIATES LONDON AND MANCHESTER
Computing Services Association
01-686 9693
AMP HOUSE DINGWALL RD CROYDON CR9 2AU

PROGRAMMING PROFESSIONALS

IRELAND c. £8,000

The demand for programming expertise is soaring with the result that we have been retained by several influential companies to recruit experienced programmers and programmer/analysts.

These vacancies offer worthwhile career opportunities to individuals, to develop their technical and business expertise. Several offer definite progression into D.P. management in multi-national companies, with salaries typically in the £7-8,000 bracket (some even higher).

Do you feel like a change close to home?

Would you enjoy working in a fast-growing economy where the quality of life is still high?

Then please phone, in strict confidence, Glenn Donnelly (Advising Consultant) to discuss these vacancies.

ZEUS-HERMES RECRUITMENT
Computer Staff Recruitment Ltd. CSR

To a Programmer with potential...

...we can offer the opportunity to play a significant part in a company within one of the world's largest organisations.

Our Head Office location on the South Coast employs 150 people and someone with one or two years programming experience can soon play a key role in the system's development within the company.

We are looking for a young graduate, preferably with COBOL experience, to work initially on a real time data base system on Data General C330 and M600 computers. The company is about to extend the use of on-line methods into other aspects of its commercial systems, which currently operate by RJE to a major IBM computer centre in London. Future development plans include a substantial data base system for our manufacturing plant on IBM equipment and future career progression could be in this direction.

If you have the potential and the ambition necessary to join this project, we will offer a highly competitive salary and benefits package which will of course, include relocation to the South Coast.

Please write with full personal and career details to: **Mike King, Employee Relations Department, Esso Chemical Limited, Arundel Towers, Portland Terrace, Southampton, SO9 2GW**

Esso CHEMICALS

OVERSEAS CITY MERCHANT BANK
seeks experienced
IBM 34 SYSTEMS OPERATOR
Top salary for right person
Write with C.V.: Box 148 CW

Contract Requirements

PL/1

IMMEDIATE REQUIREMENTS: DOS & OS
LONDON - KENT - PETERBOROUGH - HANTS
Call Richard or Suzy on 01-491 4706

Knight

GO WITH GAMMA IN THE '80's

Gamma Associates, the largest international systems house OEM specialising in digital systems, has created a number of vacancies with 5 figure potential salaries in its rapidly expanding organisation. Positions are based in Nottingham, London, Wokingham and Manchester.

GAMMA

SALESMEN AND SALESWOMEN

Earn commission selling digital systems with Gamma. The company is looking for top calibre sales staff. Earnings will be above average.

ACCOUNT MANAGERS

Gamma is now appointing managers to handle its large corporate acounts and vertical market customers.

PRODUCT MANAGERS

The company is also seeking managers to handle its horizontal market customers and products. The appointed managers will be responsible for the efficient large-scale distribution and implementation of computer systems.

It is Gamma company policy to give preference in recruitment and promotion to individuals with proven management skills.

Call or write to-day
The Personnel Office,
Gamma Associates Ltd,
Newland House,
Mount Street,
Nottingham.
Tel: 0602-412555

GAMMA

SYSTEMS ANALYST
up to £6,936

Our purpose built Computer Centre operates a 384K word 1906A with EDS60, Magnetic Tape and GEORGE 3 Operating System, 2 Communication Processors and approximately 100 Terminals.

The duties of this important post include analysis, design, documentation and implementation of wide ranging projects including financial and non-financial applications, plus Communications and Data Base orientated systems.

Applicants should have a minimum of two years systems experience, a proven record of success in implementing at least one major project and ideally, a formal qualification.

We offer flexible working hours (36½ per week), generous holiday entitlement, car parking facilities and assistance with removal expenses in certain cases.

Candidates, male/female, may obtain application forms from:

Principal Chief Officer and City Treasurer,
City of Birmingham Treasurers Department,
Council House, Birmingham B3 3AB.
Telephone: 021-235 2385.

Canvassing will disqualify.

BIRMINGHAM CITY COUNCIL

TELCON METALS LIMITED
Manor Royal, Crawley

The Company is part of the BICC Group of Companies and manufactures high precision alloys for a wide range of industries including electrical, electronic and automotive and have a vacancy for a

DATA PROCESSING MANAGER

to take responsibility for a small Data Processing and Systems Department using an ICL 7502 and 7503 connected to a 2960 running under DME in the north-west of England.

Responsibilities will include all development, running and maintenance of a wide range of applications together with supervision of the O & M Function.

The position will suit a person who has management experience coupled with a background in analysis and programming. Every opportunity will be given the selected applicant to extend their knowledge of management and project leadership.

Assistance towards relocation expenses will be given where appropriate. Salary £6500-£7000.

Write, with full CV to:
Mr. J. W. Ward, Personnel Manager
Telcon Metals Limited
Manor Royal, Crawley, West Sussex
Crawley 28800

DATA PROCESS SUPERVISOR

A Public Company requires for its North West London subsidiary a Data Processing Supervisor/Analyst to operate its computer systems. After a period of familiarisation it is envisaged that further work in developing programmes for the Group as a whole will be undertaken.

The successful candidate (male/female) will probably be a graduate with a computer sciences degree or statistical training to degree or HNC level seeking to gain experience in operational analysis.

Salary will be fully commensurate with the responsibilities of the post together with fringe benefits which include a contributory pension scheme.

Applications with details of background and experience to:

Group Personnel Consultant
BLAGDEN & NOAKES (HOLDINGS) LTD.
16/18 Hatton Garden, London, EC1 8FJ

Computer Operators
with large systems experience

Southampton
£4462-£4971 inclusive of shift allowance (under review)

Associated Container Transportation Services Ltd. operates world-wide through container services on behalf of five major shipping lines. Recently we have installed a B6700 computer with an on-line Database system to supplement and eventually replace our existing Honeywell 2060.

We now require Operators and a Senior Operator to work with both of these installations.

If the challenge of such a position appeals to you, and you have obtained a couple of years' large systems experience, preferably with Burroughs equipment, we should like to hear from you.

The post is based in our modern air-conditioned offices in Southampton and relocation expenses will be paid where appropriate.

The salary offered will be in the above range, dependent on experience; however, all our salaries are currently under review and will be revised with effect from 1st October. In addition we also offer an attractive range of fringe benefits.

If these posts interest you, please write or telephone for an application form and further details to:

Mrs. L. Lisney, Assistant Personnel Officer
ACT Services Ltd.
Richmond House, Terminus Terrace, Southampton
Tel: (0703) 34433

ACTS

Technical Authors
Croydon
£6 - £8 K

An opportunity for those with experience of Real Time Mini Computers/Telecommunications or Intel 8085 Communication Products: You may be Hardware or Software orientated as our Client is prepared to offer some training. Occasional travel to Europe and excellent relocation expenses.

Ring Real Time Mini's 24-hour personal answer hotline now — 836 9719 or 9882 day, night or weekend, and ask for Beryl McLaren.

Jupiter Computer Appointments (Real Time Mini's Place) Rec. Cons.
Suite 41/42
12/13 Henrietta Street
London, WC2

BASIC/COBOL PROGRAMMERS
Brand new project
S.W. London/N.W. Surrey
To £6,000+ p.a.
Telephone:
Glenda Jones, 01-505 5576

Carreras Rothmans

Programming Project Leaders Cobol Programmers

Vacancies for the above positions exist in the Technical Support Department at Basildon, Essex, which plays an increasingly important role within this international tobacco company, as it operates successfully in a highly competitive market.

We have two mainframe configurations, each comprising of an ICL 1903T supported by EDS 60s, magnetic tapes, card readers and line printers.

The work would involve the development and implementation of a wide range of business systems, writing programs in COBOL to run under the GEORGE II operating system.

The Department has recently purchased a number of microcomputers which will be used to develop systems written in COBOL and has also produced a system, written in BASIC, for use in the U.K. and overseas regions.

Successful applicants would be placed according to their experience and those wishing to be considered for the position of Programming Project Leader should have a minimum of 4 years' commercial programming experience, including some involvement in team leading or systems designs.

Hours of work are normally 8.45 a.m. to 5 p.m. Monday to Thursday and 8.45 a.m. to 1 p.m. on Friday although the Programming Project Leaders, being members of our management team, have no fixed hours of work.

Other benefits include:

* Generous Holiday Allowance
* Excellent Company Pension Scheme
* Subsidised Canteen
* Full Sports and Social Facilities

Please write for an application form to:

Lyn Lock (Mrs.)
Personnel Officer — Administration
Carreras Rothmans Limited
Christopher Martin Road, Basildon, Essex

1977

SENIOR PROGRAMMER

THE COMPANY

A statutory organisation providing insurance against the high cost of serious illness. VHI has a Honeywell 62/60 Computer with disk and tape systems using 192K Memory and associated V.D.U.'s.

THE CANDIDATE:

Applications are invited from persons with 3 to 5 years' Cobol programming experience, preferably on a Honeywell computer. Knowledge of Communications programming an advantage. The successful candidate will be capable of working as part of a team.

BENEFITS:

Attractive salary commensurate with qualifications and experience backed up by an attractive range of fringe benefits and excellent working conditions.

Applications giving full details should be made to the Personnel Manager:

VHI
Voluntary Health Insurance Board
VHI HOUSE 20 LOWER ABBEY STREET DUBLIN 1 TELEPHONE (01) 724499

CLASSIFIED COPY

All classified copy should reach our offices no later than 5.30 p.m. on the Monday preceding Thursday's publication. If complete artwork is supplied 12 noon on a Tuesday.

Ring David Abbey for further details on 01-261 8016.

★★ DISCOVER AMERICA★★
From New York to California

LAMBDA TECHNOLOGY INCORPORATED, a leading computer services company is seeking qualified individuals with an adventurous spirit for unique temporary employment opportunities (one-two years) at our New York, San Francisco and Los Angeles offices

We require individuals with at least 2 years' experience in any of the following

* COBOL, PL/1, ASSEMBLER
* IMS — D/B OR D/C
* CICS
* AIRLINE RESERVATION SYSTEMS

Salaries are fully attuned to experience, background and ability. Full return airfare, relocation expenses and temporary accommodation provided.

Lambda Technology will treat you as an individual and offer you the opportunity to exercise and expand your abilities within a secure and well-respected organisation. Be a part of a team of professional and responsible people who enjoy their work.

Why not explore the possibilities? Send your résumé inconfidence or telephone:

Mr. Tony Blomfield, Director
Lambda Technology, Incorporated
Suite 500, Chesham House
150 Regent Street, London W1R 5FA
Telephone: 01-439 6288

LONDON BOROUGH OF BARKING

ASSISTANT COMPUTER MANAGER

Grade P.O.1(C) £7,446-£8,229
per annum inclusive

This vacancy has arisen following the promotion of the Assistant Computer Manager to Computer Manager. Suitably experienced men and women who are able to communicate with and motivate staff are invited to apply for the vacancy. The Council has an IBM 370/125 Computer with 4 disc drives and 2 tape drives using RPG II, and the ability to make full use of this installation and develop and implement new on-line systems and procedures is required.

Housing accommodation will be made available to the successful applicant.

Application forms from Borough Treasurer, Civic Centre, Dagenham, Essex. Telephone 01-592 4500, Ext. 382.

Closing date: 14.9.1979

THE SALES AND MARKETING BIT

MONEY MATTERS—2

Discounts and bad debts

FOR many people a reasonable price is that which remains when one has subtracted a discount.

There are two significant factors related to discount. Firstly, one quickly reaches a point where the job requirement is for an order-taker rather than a salesman. Secondly, if a company cannot consistently maintain its profit levels, it is likely to go out of business.

Too many salesmen are convinced that price is the paramount factor within the decision-making process, when in fact many considerations are at least as important — company liability, delivery, related experience, reference clients, support services, product reliability, capability, quality, performance, etc, etc.

Yet, essential as these factors are, their quality must decline relative to the reduction in the profits which fund them.

If discounts are relevant and necessary, they should be the last item on the agenda of sales negotiation, not the first. Starting out by offering a discount is probably the best means of destroying one's professional credibility.

It is unfortunate that the salesman has, for the most part, little control over the profitability of his company other than maintaining standard prices. Otherwise, it would make a lot of sense for sales targets to be based on profit rather than revenue.

However, a multiplying factor related to the deduction of discount from sales commission might be a reasonable incentive. That, of course, assumes the discount was the salesman's idea and not his manager's.

Discounts are effectively academic when it comes to the critical factor of payment. A sale is not a sale until the goods are paid for.

I am always surprised when I hear people pose the question "Who is responsible for getting the money in?" It seems to me to be a contrived dilemma, a buck-passing exercise, so that no one gets lumbered with the nasty job of asking people for money.

Make no mistake; it is the salesman's responsibility to ensure that payment is ultimately made. It is his job because agreeing a price and a time of payment must be part of his formal presentation and subsequent contract.

Only in circumstances where his company fails to deliver the goods it (rather than he!) promised to deliver can he have the possible excuse of getting out from under. Even then, as the company to the client, it is still he who has the face-to-face contact and therefore is most likely to obtain payment for services or products rendered.

The question of debt collection also raises the point of related commission. Should commission be paid before the client pays the bill?

To a degree it very much depends on the delivery lead-time. It would be unfair for the salesman selling large value capital products on extended delivery lead-times to have no credit for securing the order.

On the other hand, maybe this type of sales should be on such a high proportion of basic salary to commission that payment of commission on settlement of bill might not be too much of an imposition.

From an accounting and administrative point of view, payment of commission at any time other than when billing occurs is usually more nuisance than it's worth, although bad debts are usually deducted when they are confirmed. Consequently, few companies actually hold the commission of payment until the money comes in from the client.

Nevertheless, it is both unreasonable and inefficient to leave bad debt collection to continual letter writing and occasional telephone pleas of the accounts department. A quick face-to-face from the salesman who sold the goods is usually the best way of getting the money.

One way in which the salesman can both make the point on subsequent prompt payment and sometimes help the client at the same time, is to offer hire-purchase or leasing terms when actually making the sale. You would be surprised at how many people withhold payment, not because of that small technical fault or that slight departure from specification, but simply because they can't afford to pay.

Could that mean they were over-sold in the first place?

TRADER

PRODUCT NOTES

Modem simulator

FOR panel mounting applications, the data communications division of Lion Systems Developments has introduced the modem simulator, Model 1680.

The Model 1680 will operate at speeds of up to 19,200 baud in an asynchronous full duplex mode on twisted pair cable. Data can be transmitted for distances of up to 4 kilometres at DC levels with complete isolation between data terminal equipment.

Product features include low operating power and local loop back.

Lion Systems Developments (CW), Halifax House, Halifax Road, High Wycombe, Bucks. Tel: High Wycombe 35028.

Puzzle Answer

THE five-move solution is: 10-3, 1-6, 8-10-3, 4-1-6-4, 7-2.

Programmers Walk into an extra £1½K

Look at these outstanding opportunities for Programming Staff! Our D.P. Operation is based on a large ICL mainframe, involves a large number of mini-computers, and includes a communications network.

SENIOR PROGRAMMERS

Work entails participation in system design, program specification writing, quality control, and the supervision and scheduling of teams of programmers. Applicants should have around 5 years' meaningful experience using COBOL.

PROGRAMMERS

Must be capable of producing correct programs within an agreed timescale. COBOL experience is essential. Some of the programming work involves mini-computers: training will be provided.

Location

Feltham, Middlesex. Ideally situated between the M3 and the M4, and close to Feltham Railway Station.

Salary

Candidates with the correct qualifications could expect to significantly improve their current salary. We would not be surprised if this amounted to an extra £1½K.

Other Benefits

Free 3-Course Lunch, Subsidised BUPA, Pension Scheme, Free Life Insurance, Free Christmas Turkey, Sports and Social Activities, Relocation Expenses where appropriate.

Please telephone Angeline George for an appointment on 01-890 1313.

THE RMC GROUP
We're into much more than you think

GUIDE TO RECRUITMENT CONSULTANTS IN THE U.K

LONDON & HOME COUNTIES (LH). MIDLANDS (M). NORTH (N). SCOTLAND (S). OVERSEAS (O).

PERMANENT AND CONTRACT
SAGITTA
U.K. AND AMERICA
Sagitta Limited, 1a Sunset Street, Macclesfield, Cheshire, SK11 6UW
Telephone Macclesfield (0625) 28538

£4000-£7000+
Analysts & Programmers
061-832 4184
(Transfer charges if necessary)
Sampson Staff (N)

A PROFESSIONAL RECRUITMENT SERVICE TO CLIENTS AND CANDIDATES
Vacancies in Scotland, England and abroad
Free advice on how to find computer staff
DML COMPUTER PERSONNEL SERVICES
11 CHARLOTTE SQUARE
EDINBURGH EH2 4DR
031-226 6674. TELEX: 727330 (S)

COMPUTER INDUSTRY SPECIALISTS
SALES • SYSTEMS • MARKETING • ENGINEERING • PROGRAMMING
INSIGHT MARKETING & PERSONNEL CONSULTANTS LTD.
72/75 Marylebone High St., London W1M 4AJ
Telephone: 01-486 6644
20 Upper Fitzwilliam St., Dublin 2
Telephone: 0001-7663 87/0001-7665 43 (N)

FOR THE BEST PERMANENT AND CONTRACT JOBS IN THE NORTH OF ENGLAND
Victoria Appointments
24 Mosley Street
Manchester 2
Phone
061-236 7316 or 7417
061-440 8134 (Home) (N)

MINSTER MANAGEMENT SERVICES
MMS
8a Coney Street, York YO1 1NA
For details of services to clients and applicants
★ ring Norman Routledge on 0904 24852 or 0904 797016 (evenings and weekends)
★ or write, in confidence, to above address

FOR A PROFESSIONAL SERVICE THROUGHOUT SCOTLAND, ENGLAND, WALES, EIRE, CONSULT.
MAL-N ASSOCIATES LTD., 5th FLOOR, GORDON CHAMBERS, 90 MITCHELL ST., GLASGOW G1 3NG.
TEL. 041-226 4721. (S/N)

PERMANENT & CONTRACT
SDM COMPUTER SERVICES
Freepost
BEBINGTON
Wirral, Merseyside
L63 3AB, 051-608 9365 (N)
SDM

PROGRAMMERS & ANALYSTS
permanent and contract opportunities
TELEPHONE 061-941 1922
Gemini Computer Systems Ltd.
Roberts House,
80 Manchester Road,
Altrincham WA14 4PL.
GEMINI Recruitment (N)

QUADRANT RECRUITMENT LIMITED
Philip Hockley, Ashley House, Ashley Rd, Altrincham WA14 2DB Tel: (061) 928 8302
Bill Baker, Bank House, Queen St, Sheffield S1 1UL. Tel: (0742) 738794 (N)

Inter-Selection
PROGRAMMER & ANALYST
vacancies in the NORTH
LEEDS, MANCHESTER
LIVERPOOL etc.
061-832 4181
or
061-928 0423
(eves) (N)

Ivor Norton Management Services Ltd
Recruitment Consulting Division
62 Shaftesbury Avenue, London W1V 7DE
01 734 8662 (24 hour answering service)
P.O. Box 63, Copthall Tower House,
Harrogate HG1 1TS. Tel Harrogate 66628

8 DIGITS THAT ADD UP TO A GREAT JOB IN THE U.K. OR OVERSEAS
0565 4925 (N)

COMPUTER INDUSTRY SPECIALISTS
SALES • SYSTEMS • MARKETING • ENGINEERING • PROGRAMMING
INSIGHT MARKETING & PERSONNEL CONSULTANTS LTD.
72/75 Marylebone High St., London W1M 4AJ
Telephone: 01-486 6644
20 Upper Fitzwilliam St., Dublin 2
Telephone: 0001-7663 87/0001-7665 43

FOR FURTHER DETAILS OF THIS WEEKLY FEATURE
Contact: Owen Kelly, 061-872 4211
Basil McGowan 021-356 4838
Mark Williams, 01-261 8019

International EDP Auditor

We are seeking:–
– an EDP Professional with basic accounting knowledge to join our EDP Auditing Group on assignments that cover all EDP aspects of Mobil's worldwide petroleum and chemical operations.

The work involves:–
– review of Systems and Data Processing installations, appraisal of internal controls and operating procedures of computer systems, discussion of findings and recommendations with Senior Management, culminating in submission of reports which must be clear and concise. Other duties include advising non-EDP auditors on implementation of computer audit and retrieval programmes. High standards of performance are expected and the ability to communicate effectively at all management levels is essential.

Candidate (male or female) must be:–
– preferably aged 25–35 with at least six years' experience with large-scale computer equipment and mini-computers; experienced in systems analysis, programming, project management and computer operations; preferably holding university degree. Although a professional accounting qualification is not essential, some experience and training in accounting is necessary.
– single or married without children.

The assignments would be:–
– particularly attractive because of the extensive worldwide travel involved.
– almost exclusively outside the UK, entailing continuous living abroad and travelling between locations.
– more competently completed with a knowledge of French, German or Spanish.
– most helpful in providing the incumbent with management EDP auditing experience for further career progression in EDP or financial management with this worldwide, fully integrated oil company either in the UK or abroad.

We offer:–
– attractive salary package (which includes tax-free overseas premium) plus full accommodation and living expenses (including spouse), life assurance, pension and dependants benefit scheme, home leave.

Please write to C. T. Spalding giving details of qualifications, experience, age and current salary to:–
Mobil Services Company Limited,
Overseas Recruitment
54/60 Victoria Street,
London SW1E 6QB.

Mobil Services Company Limited

BOOK REVIEWS

The joys of writing programs in PL/M

A guide to PL/M programming for microcomputer applications, by Daniel McCracken. Addison Wesley Publishing Co Inc, 11 Hills Place, London, W1R 2LR. 262pp. £7.50.

THIS book is the other end of the spectrum of interest from Digital Circuits (CW, March 1). It describes a language which enables the user to regard not just the electronic circuits of a microprocessor as a "black box", but its entire architecture, including its instruction set.

It is interesting to speculate that the future systems designer may well work at each end of this spectrum, and not much in the middle: i.e. he may well configure a microprocessor, some RAM, peripheral interfaces, and some analogue to digital converters, then write programs in a high level language for his creation, without ever knowing that Store Accumulator A is 91 in hexadecimal.

The book is more for learning than for reference. It has plenty of explanations, examples and exercises, rather than formal definitions which can probably be obtained from an Intel manual. It does, however, have a good index, produced by a program described in the text.

There are two possible classes of reader — those who are intending to use a PL/I-type language, and there is one for most popular microprocessors, e.g. PL/Z for the Zilog Z80 on a micro, and those who are simply computer students, who are being given PL/M as a "modern programming language", and may well be using a microprocessor-based teaching computer simply because it is cheap.

For the first kind of student this book is an excellent introduction, but one must point out that the choice of PL/M is by no means a foregone conclusion, and the alternatives, such as machine code, Assembler, Basic, Coral, Cobol, Fortran, or RTL/2 have to be considered, since one's choice of language is probably dominant in determining the total cost of ownership of the software concerned.

It would have been useful to have included some rough guide to how efficient the compiler is in generating fast, short code, and how the elapsed time to write and debug a program in PL/M compares with its competitors.

The reviewer has a soft spot for PL/I, a language much reviled by purists, since he developed some flight planning systems on it in the mid 60's.

It scores when the application demands, as his did, a mixture of mathematics and low level data manipulation. If mathematics alone are needed, we can use Fortran or Algol or, provided speed of execution is not required, Basic.

If low level data manipulation is needed, as in McCracken's index-producing program, Assembler is adequate and may be as quick to write, by a trained programmer.

But if the system needs both, PL/M scores.

Furthermore, even if individual problems do not have both aspects, it may be worthwhile standardising on a PL/language in a particular project team in order to reduce training costs and increase interchangeability of staff.

For the second possible kind of student — the one who is using PL/M and a microcomputer simply because PL/M is a "typical language" and a micro is a cheap system on which to learn, one should issue a slightly different warning: PL/ languages are fairly readable and do not contain the "blips" that madden the newcomer to Algol and Coral, or the ODs and FIs which make such languages more fool-proof. Programs written in PL/I type languages get through compilation more easily than others with more rigorous and less forgiving syntax. This means that incorrect programs have a better chance of reaching the stage of producing incorrect results, and this is a very big problem for the beginner.

Secondly, the practical problems of compiling, rather than assembling or interpreting, will make the turnrounds rather longer: this may be a considerable factor in choosing a language as an *ab initio* training vehicle. Perhaps a PL/M interpreter may be the answer?

But in spite of these warnings, one has to say that it is extremely well done, and it is nice to see McCracken, who wrote his first book on digital computer programming back in 1957, is still an old pro like Knuth and Dr James Martin.

Let's hope to read in 1999, McCracken on "Programming Associative Manifolds in Telepathic Metastructures" or some such.

Dr JOHN RACE

'Don't put all your comms eggs in one packet'

Communications satellite systems, by James Martin. Prentice Hall International, 66 Wood Lane End, Hemel Hempstead, HP2 4RG. 397 pp. £25.55.

CAN Man prevent the onward march of technology? Does he want to? Does he need to? Where will it end? Will it end? Martin's latest book on satellite communications presents much thought-stimulating material.

Some 40 years ago Bernal and Clarke predicted the linking together of the human species and computers into one "macroscopic organismal complex".

This book indicates how this might be achieved through the medium of communications satellites and various interactive Man-computer devices.

Consequent to this, in the long term, the author sees the basic nature of Society changing quite drastically — mainly as a result of the fundamental interaction that this new communications technology will permit.

The book is divided into two parts: The Space Segment (Chapters 1 to 9) and the Ground Segment (Chapters 10 to 25). The early chapters of the book describe the historical development of satellite communications and the basic nature of satellite communication links.

From the statistics presented in this section one can easily deduce that even though down here on planet Earth the size of "the computer" is getting smaller and smaller, out there in Space the physical size and capacity of satellites is increasing quite significantly.

This can be seen by comparing the relative sizes of one of the first satellites Score (1958) which weighed a mere 150 lb with Intelsat V (scheduled for launching in 1979) which is likely to weigh about 3,200 lb.

There are some interesting chapters on interactive computing, Aloha Channels, based upon the Hawaii University system, and packet radio terminals.

The book covers most of the areas of current satellite communications technology but deals only scantily with scanning spot beam methods. This is understandable since this is an area that is at the forefront of development.

Later chapters of the book deal with possible future developments, trade-offs in system design and, of course, the inevitable privacy and security aspects of satellite communications systems.

Here the author discusses the need for encryption techniques such as the Vernam system, Lucifer and the US Federal Standard based upon LSI chips.

Naturally, the problem with communication satellites is that they could easily be destroyed by an unfriendly rocket. This prompts the author to hint at the possibility of the Russian destruction of US satellites.

Surely, land communications devices are equally susceptible? He concludes this chapter with the rather apt description: "Survivability in an immensely complex technological society depends upon diversity". In other words: "Don't put all your communications eggs in one packet"!

The book is produced to a very high standard but is not entirely free of typographical errors. Page 19, for example, contains a "nonsense" sentence that obviously escaped the attention of those who proof-read the text.

Unfortunately, some of the chapters of the book duplicate material that is presented in several of the previous Martin telecommunications books.

Still, one would go as far as predicting that this book will be yet another "best seller" for James Martin.

Dr PHILIP BARKER